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Address.

THE DIFFERENTIAL DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

By William H. Smith, M.D., Boston,
Visiting Physician to the Massachusetts General Hospital.

It is my belief that the recognition of pulmonary tuberculosis has reached a high level in this state. It is my belief that the number of cases wrongly diagnosed is infinitesimal in proportion to those in which the correct diagnosis is made. I think if those cases were excluded where carelessness permits well developed phthisis to be called grippe or malaria the real quota of mistaken diagnoses would be very small.

It is the occasional or unusual case that I wish to speak of. It is possible that I overemphasize the importance of these, but experience and interest have brought me in contact with many pulmonary conditions, tuberculous and non-tuberculous, while several thousand sputum examinations have put me in touch with infections other than those due to the tubercle bacillus.

The subject for discussion—"The Differential Diagnosis of Pulmonary Tuberculosis"—naturally divides itself into two parts:

(1) The differential diagnosis of early pulmonary tuberculosis.

(2) The differential diagnosis of late pulmonary tuberculosis.

Among the frequent manifestations of early pulmonary tuberculosis may be mentioned: (a) loss of weight; (b) hemoptysis; (c) fever; (d) debility; (e) cough. There are well recognized clinical conditions other than phthisis in which these symptoms, one or all, may appear. If mistakes are made they are usually through carelessness rather than lack of knowledge. I think there is some danger in emphasizing slight variations in apical percussion, or even in too literal interpretation of x-ray plates, without obtaining all the facts which a careful history or a more careful physical examination would furnish. I believe the expert on tuberculosis would be a better diagnostician if he saw more non-tuberculous cases.

(a) *Loss of weight* is a striking and early symptom of pulmonary tuberculosis. I would merely call attention to the fact that loss of weight greater than is usually seen in tuberculosis may be the first manifestation of the early thyroid case. Before goitre or exophthalmos appear, this loss of weight, with slight increase of the pulse rate, may suggest the possibility of phthisis. When tremor, which is present in these cases, is especially looked for, it usually will be found. Too frequently it is misinterpreted, as is the pulse rate, and considered of nervous origin, therefore phthisis is considered most likely. A most careful history of the incidence of tuberculosis in the family, a most careful questioning for any previous tuberculous infection, and a careful physical examination for evidence of old foci of tuberculosis, pleuritis, glandular tuberculosis, or tuberculosis of the genito-urinary tract, will usually add evidence for or against phthisis. Louis' law should be remembered in this connection: "After the age of puberty a tuberculous lesion in any part of the body is almost invariably accompanied by pulmonary tuberculosis."

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* Read before the Framingham Medical Club and the Community Health Station, September 20, 1917.

I saw, recently, two patients—one a doctor. Each had lost weight—one, forty-five pounds; the other fifty pounds, in a few months. The doctor was sure he had tuberculosis. In each the diagnosis of early thyroidism was made; within a few months both had developed goitre and exophthalmos. The diagnosis was suggested by the marked weight loss, the tendency to tachycardia, and the tremor. In any doubtful case the high basal metabolism present in goitre would make certain the diagnosis.

(b) *Hemoptysis.* I believe in the correctness of Cabot's dictum: "I do not deny that the causes of hemoptysis are numerous, but I assert that the causes of genuinely obscure hemoptysis in temperate climates may be reduced to one—pulmonary tuberculosis."

Too frequently patients are seen who give the history of having had hemoptysis several months before, who have been told by their physician that the blood did not come from the lungs. No adequate examination has been made of the case, no proper treatment for the underlying tuberculous condition has been instituted. When examined, advanced phthisis is only too frequently found. I believe widespread instructions upon this neglect of a very important symptom are necessary, judged by my personal experience with these neglected cases.

In the list of causes of hemoptysis in Cabot's "Differential Diagnosis" at the Massachusetts General Hospital, there were 1723 cases of phthisis, 1177 of mitral disease. I do not think this proportion fair, for limited numbers of phthisis cases are admitted to the wards of this hospital, while the cardiac cases are welcomed. The essential feature is that in mitral disease hemoptysis is common. I know of no heart condition so frequently overlooked as mitral stenosis, unless it is the early aortitis case. The reasons for this are, I believe, in the main, two: (1) Frequently the presystolic murmur or the diastolic murmur of mitral stenosis is absent at the time of examination; (2) it is heard only in an unusual position. Where a careful history has been taken, and frequent sore throats are recorded; rheumatic fever or chorea appears; where the tonsils have not been enucleated, and are still large, or merely clipped, the weight of evidence is in favor of cardiac mischief. It is not sufficient to disregard the soft systolic souffle at the apex, and explain it as hemic or due to the general condition of the patient. Cardiac hypertrophy should be most carefully looked for. The apex of the heart should be palpated with the patient in the left lateral position. Murmurs should be listened for over a wide area, with the patient in various positions. If the hemoptysis is not too recent, slight exercise should be tried to see if the murmur will develop. Deflation of the lung (panting) will oftentimes produce change in the first sound, or develop a presystolic or diastolic murmur, clearly due to mitral stenosis. Check upon the probability can be made by a seven foot x-ray plate, or cardiogram tracing.

I have known bleeding from a gastric ulcer to be mistaken for hemoptysis. This could occur only where the patient was not seen at the time of the bleeding, or through a very imperfect history of the attack.

The bleeding associated with the expulsion of a fibrinous cast, and that with the expulsion of a foreign body (a piece of chicken bone) were both thought due to tuberculosis of the lung. In one large hemorrhagic cast three tubercle bacilli were found.

(c) *Fever.* There are some patients in whom slight registration of evening fever, with chilly sensations, have led to the suspicion of phthisis. It is important to consider in this type of case foci of concealed pus. X-rays of the sinuses, of the teeth, careful questioning about recent fillings of teeth or tender teeth, should be made. Examination of the urine should be made with a view to excluding an unrecognized pyelitis, possibly even associated with a silent calculus, only to be discovered by the x-ray. Occasionally syphilis of the lung with hemoptysis, or syphilis of some internal organ, with fever, may lead to the suggestion of phthisis. A Wassermann would probably clear the diagnosis at once. Occasionally Hodgkin's disease, with fever, without palpable gland enlargement may simulate phthisis. Usually the splenic enlargement, the enlarged bronchial glands, or mesenteric glands will suggest the possibility of the condition.

(d) *Debility.* Under the term debility is usually classified a candidate for phthisis. This group comprises many of the gastroptotic, low blood pressure cases, with gastric symptoms In these thin, weak-muscled individuals, the physiological differences of the apices are exaggerated, especially when varying degrees of apical atelectasis are present. These patients require a great deal of study and much investigation before tuberculosis can be excluded. The majority of them are women; their usual age, twenty to thirty. They are usually much operated and much drugged, which adds to the confusion of the real underlying condition. Occasionally one has Addison's disease—the x-ray of the lungs will frequently show calcified glands or peri-bronchial thickening. No harm is done in treating them as if tuberculous, if over-feeding does not upset the ptosed stomach.

(e) *Cough.* Someone has said that every cough of two months' duration is due to tuberculosis. This is, of course, absurd. To determine the cause of the chronic cough may require time. To assume it at once due to phthisis discredits the examiner. The sputum examination separates often, at once, the tuberculous from the non-tuberculous case. It is surprising how difficult it is for early phthisis cases to furnish sputum. Bring them a cup, stand over them, and tell them to cough and spit into the cup. This simple method will raise at once the number of positive sputum findings. By this method I reported twenty-one positive sputum findings in one month's out-patient service. It is the atypical case, with the atypical history, in whose abundant sputum no tubercle bacilli have ever been found, that is so frequently puzzling. Physical examination usually helps to clear up the diagnosis in those cases where cough is the chief symptom. The age of the patient suggests other possible causes than phthisis. X-ray examination of the mediastinum or lungs, for glands, aneurysm, foreign body, high diaphragm, eliminates many possible factors, while Wassermann reactions and bacteriological sputum examinations assist in the diagnosis.

Occasionally, errors in diagnosis occur when pain in the chest suggests pleurisy; pleurisy, tuberculosis; and tuberculosis, phthisis. Two patients with the diagnosis of pleurisy were found to have mastodynia. One had syphilitic periostitis of a rib; one, referred pain from spinal osteo-arthritis. Metastatc pleural involvement from adeno-carcinoma was proven in one case by excision of a small gland just under the outer border of the pectoralis major muscle, and hypernephroma with lung metastasis, by x-ray of the kidney.

The acute broncho-pneumonia of influenzal origin, where the focus is situated at an apex, offers an interesting field for differentiation from early phthisis. The association of sinus infection is common in influenzal cases. X-rays of these are frequently of value. Tuberculosis of sinuses is rare. The finding of an extensive involvement of the naso-pharnygeal tract in a suspected case is against phthisis, but favors some other infection, like influenza. The history and further examination will make the diagnosis clear. In other words, to the careful man who employs modern methods of diagnosis, the differential diagnosis of early pulmonary tuberculosis offers little difficulty. I have often thought it would be of value to have a show-down of the evidence upon which some of the diagnoses of phthisis are made. I have encountered sufficient error in my experience to make me question if at times too much was not taken for granted in making such a simple diagnosis. It is carelessness, not ignorance, which renders differential diagnosis of early pulmonary tuberculosis difficult, if it is difficult. The essential factor to remember is: the safety of the patient and the community is of much more importance than is the diagnosis. While this is being cared for by the provisional diagnosis of phthisis, further evidence may be accumulated for or against phthisis. It is when this evidence is not sought for, or the patient not treated as if phthisis was present, that the mistake is made.

When we come to consider the differential diagnosis of late pulmonary tuberculosis, the problem is more complicated. In my experience any acute inflammatory condition of the lung, if it is obscure, or unrecognized, may, if it goes on to pus formation, either by retention or compression, at times by extension, produce a condition simulating late phthisis. Pressure by aneurysm or new growth upon bronchi, with a resultant bronchorrhea, and fever, may suggest late phthisis. New growths, either by their pleural involvement, or when necrotic or secondarily infected, may mislead. Foreign body or embolic lung abscess is difficult of differentiation. Primary suppurative foci beneath the diaphragm, like the appendicular liver or perinephritic abscess, may, by their secondary pleura or lung involvement, suggest pulmonary tuberculosis.

How many specialists of tuberculosis, when called upon to diagnose an obscure lung condition following an appendix operation, question whether any focus of pus was present around the appendix at operation? With this fact known, the probability or improbability of a primary or secondary lung condition at once appears. Again, it is difficult to explain an obscure lung condition when in one interspace serous fluid is obtained, and 1 cm. lower, chocolate colored pus is drawn off, unless the history of operation for ureteral stone three months before is ascertained, and the fact that there was some pyelitis following operation. With these facts, perinephric abscess, sub-diaphragmatic abscess, secondary pleural irritation with lung compression, becomes apparent.

Fever, cough, loss of flesh, purulent sputum of months' duration led, with the physical signs to the diagnosis of tuberculosis, although no tubercle bacilli were found in the sputum. The history of the case favored septic embolism with pulmonary abscess and secondary lung involvement. Operation showed this to be correct. The history in brief was as follows:

A woman operated for fixation of uterus—infected wound. A few days later sudden left axillary pain waking her from sleep; a few days later pleuritic pain, fever, then cough and purulent sputum. Sputum negative for tubercle bacilli—large numbers of streptococci, extra and intracellular. Primary streptococcus lung involvement is rare. It is usually secondary to embolism or part of a general streptococcus process or infection from inhalation. The presence of hematoidin crystals in the sputum was consistent with broken-down blood clot; consistent with embolic infarction.

In one lung, at autopsy, when a suppurating mediastinal lymphoma had produced pressure on the left lung, was found pleurisy with effusion, pressure atelectasis, bronchial compression with dilated bronchi, bronchorrhea, infarction, and pulmonary vein thrombosis. Imagine relying upon the changing daily physical signs in such a case! Yet there was cough, purulent sputum, fever, sweats; the patient was a young adult. The only positive aid in diagnosis was plate No. 2, x-ray, out of ten plates taken. This early plate was more suggestive of malignant lymphoma or mediastinal tumor. With the progress of the pathological lesions, due to compression, all other interpretations of the x-ray plates were unsatisfactory. Aneurysm was excluded by seven foot x-ray plate; absence of Wassermann reaction; absence of aortitis; the esophagus, when filled with barium and x-rayed, was found to be dislocated. Against tuberculosis surely!

I believe certain chronic influenzal bronchiectatic cases are wrongly diagnosed phthisis. As the condition is incurable the harm is not great, as the method of treatment applied for these supposed phthisis cases is in the main beneficial. The differential diagnosis is difficult, and time consuming. It can be done, however.

I think the differential diagnosis in elderly people between chronic bronchitis and emphysema and extensive phthisis is important. Under the emphysema the physical signs of phthisis are masked, and as they frequently show no fever and no increase of pulse rate, they are treated for bronchitis. Examination of the sputum for tubercle bacilli in this group of cases would yield some interesting results. I believe they are a source of danger because unrecognized.

The occasional foudroyant phthisis, simulating lobar pneumonia, can easily be recognized if the sputum is examined for tubercle bacilli. Fortunately this form of tuberculosis is rare, and the patients are bed-ridden from the start, and die before much chance for contact infection has occurred.

I have personally seen simulate late pulmonary tuberculosis, syphilis, influenza, bronchiectasis, multiple influenza broncho-pneumonia, foreign body bronchiectasis, foreign body inhalation pneumonia with abscess, after tonsillectomy or following teeth extraction under ether, encysted empyema, subdiaphragmatic abscess, actinomycosis, malignant suppurating lymphoma, malignant disease of the lung, aneurysmal phthisis. In other words, any of the acute infections, given time enough, may through their chronicity simulate, identically, late tuberculosis. The history of the original onset of the condition, with a knowledge of pathology and bacteriology, is as important in the differentiation of these cases as are the physical signs. In other words, I believe it difficult, outside of a big institution where every means of diagnosis can be applied, to differentiate some of these cases, and then only after much work has been done on the case. These cases in which no tubercle bacilli have been found with suggestive evidence against tuberculosis, should, in my opinion, have the benefit of investigation at one of the large hospitals. No consultant can diagnose the case seeing it but once. It is only when evidence has been accumulated that the diagnosis will appear. This takes time and labor.

My own practice in these chronic pulmonary conditions simulating phthisis is as follows: First, a most careful history, not only of the family but of the social conditions, of the working conditions, with the possibility of infection at home or at work; whether the patient has recently moved into another house, or has travelled much; the onset of the pulmonary condition; whether it started as a nasopharyngitis with fever, acutely, or followed an infection suggesting pneumococcus pneumonia; whether there had been any recent operations; if so, what they were, the anesthetic used, whether badly taken, the condition found at operation; the convalescence, if complicated. Next, the amount of sputum raised is carefully inquired into, its character, purulent, with or without hemoptysis, odor, ease with which it is raised. Cough; its character, dependent upon position, increased by change of position, productive or non-productive, periodic or constant, with or without heart symptoms. The sputum is then examined daily for tubercle bacilli, while the patient is under observation. If no tubercle bacilli are found, the type of prevailing organism present is noted—extra or intracellular, presence or absence of hematoidin crystals. In my experience in all chronic bronchiectatic cases the influenza bacilli will be found if careful search is made, frequently, of course, mixed with pneumococci and diphtheroids. Desquamated cells from the bronchi will usually be found. If hemoptysis occurs, frequently the sputum in the next few days will show large numbers of influenza bacilli. They may be isolated in pure culture on hemoglobin agar. Slides are made, and stained by Gram-eosine, and looked over with the low power for branching filamentous threads, Gram-staining. Elastic fibres are searched for. Presence or absence of large numbers of eosinophile cells is noted. Charcot-Leyden crystals are looked for in the sputum. Occasionally asthma simulates phthisis. Usually some clue as to the probable infection may be obtained by this searching sputum examination.

Four-hour charts are started on all patients at admission. X-rays of the chest are taken;

later, if necessary, stereoscopic. In one case an aluminum tracheotomy tube, blocking the left bronchus, with bronchorrhea, fever, chills, sweating, extensive left lung signs, failed to show in x-ray plates especially taken to exclude foreign body. Wassermann reactions are the rule on all cases in the ward.

If effusion is present, tapping, with bacteriological and cultural examination, is done, with cell count. Smears of all fluids are stained by Gram and eosine. Frequently dead pneumococci will show in the smear when they do not grow out in the culture.

If there is any suggestion of new growth, either in the history or physical examination, the primary tumor is sought for. X-rays of stomach and intestine, bismuth enemata, uterine examinations, x-rays of kidney for hypernephroma, commonly metastasizing in the lung or pleura, even x-rays of the distended kidney pelvis where the suggestion is warranted after a genito-urinary consultation. Any accessible gland along the outer border of the pectoralis major muscle, or if accessible in the axilla, or even above the clavicle, is excised and sent to the pathologist. Blood examinations with differentiation are done as a routine to exclude hidden suppurations or leukemia. In rare cases, after consultation with an expert in the use of tuberculin, tuberculin tests may be made. Daily amounts of sputum are measured in the ward; the larger the amount the more apt is bronchiectasis or undrained abscess or empyema, encysted, to be found. Clubbing of the fingers and toes is noted. Aneurysm is excluded by the absence of aortitis. I have had no bronchoscopic examinations made.

In doubtful cases exploratory thoracotomy is advised, after carefully going over the case with the special surgeon; each detail in the presumptive diagnosis being given; whether the focus is below the diaphragm or above; whether secondary to embolism or pressure; the evidence against tuberculosis is presented with the evidence for the probable condition; the pre-operative risk of the patient is carefully gone into by the medical service.

A surgeon has been following the past two weeks a case. The examination of the pleural fluid has been done on five separate fluids, daily tubercle examinations of the sputum have been made, repeated x-ray plates have been taken—kidney plates as well as lung plates. Whether a small sub-diaphragmatic abscess has secondarily infected the pleura, or a small lung focus, possibly tubercular, is the cause of the suggestive purulent pleuritis, has not been determined to date.

CONCLUSIONS.

I do not think the differential diagnosis in early phthisis offers much difficulty if care is used. If there is any doubt, the patient should be treated as if tuberculous; the possibility of thyroidism, of mitral disease, concealed pus, ptotic conditions, should be thought of in the doubtful case. A careful history or further examinations will clear up the diagnosis. In the meanwhile the patient is being treated as if phthisis was present.

In the late cases I do not believe, when the doubt of phthisis has been raised, that it is possible, without being prepared to follow out the methods of diagnosis suggested, to differentiate between late phthisis and other lung conditions. I believe these patients should be referred to one of the large hospitals, where, at small expense, the necessary examinations can be made. Without them I, personally, do not know how to differentiate these atypical lung conditions simulating late tuberculosis.

Society Report.

NEW ENGLAND PEDIATRIC SOCIETY.

Meeting of Society held at the Boston Medical Library on April 27, 1917, at 8.15 p.m.

Dr. Maynard Ladd of Boston in chair.

The following papers were read:

1. "Treatment of Eczema," Charles J. White, M. D., Boston.
2. "Mechanisms of Defense and Serum Treatment of Poliomyelitis," Harold L. Amoss, M.D., New York.

Discussion opened by Dr. Francis W. Peabody, Boston, Dr. Edwin H. Place, Boston.

Light refreshments were served after the meeting.

THE TREATMENT OF ECZEMA IN CHILDHOOD.

By Charles J. White, M.D., Boston,
Edward Wigglesworth Professor of Dermatology in Harvard University.

The eczema of childhood has always been one of the dermatologist's difficult problems, but, within a few years, since the introduction of fecal examinations and cutaneous food tests, the pediatrists have been assuming more and more of this etiologic and therapeutic burden; to such an extent, in fact, that some of them have appeared in print with the startling assertion that henceforth eczema should be considered the pediatrists' province, validating this claim on the grounds that the treatment of eczema is purely a question of feeding. We dermatologists who have dealt with this problem for so many years do not hesitate to dispute this claim vigorously; first, because we know from our experience in public and private practice that many pediatrists are not yet capable of making a proper diagnosis of the complex disease, eczema; and secondly, because we are not yet convinced that all examples of the conditions now classified under the heading of eczema have been proved to be dependent on food poisoning, so to speak.

This is seemingly, perhaps, a peculiarly ungrateful introduction to this paper, the investigations for which have been based on the pioneer work done by one of your members, Dr. Talbot, who, in 1913, in conjunction with Dr. Towle, published an article on the stools of eczematous babies. Nevertheless, I must stick to my guns for the reasons aforesaid.

Following the lead thus described, I have devoted practically all of my medical leisure during the last three years to the etiological question of eczema from the standpoint of food. Cutaneous food tests and stool examinations have been made, and my records of children and adults extend now to above three hundred. Let me hasten at once to state that the cutaneous tests have been made largely by my house officers, and the fecal examinations by Dr. F. B. Talbot, Dr. L. W. Hill, and by my house officers as well. To all of these valuable coöperators I now extend my sincere thanks.

The results which follow later on in this communication relate to chronic eczema—that mysterious cutaneous eruption the cause of which has thus far escaped detection, and the rapid cure of which still awaits further solution. You will see, therefore, that I do not include in this category the cases of acute eczematous dermatitis (dermatitis venenata), the origin of which we know, or the examples of more or less long-continued eczematous dermatitis which yield promptly to expert external treatment. The type of eczema to which these experiments relate is represented by those cases which may begin within a few days or weeks of birth without ascertainable reason and persist, despite the best of care, for one or more years and in some instances off and on until the death of the individual in old age.

Before we take up this more difficult subject, let me dismiss the easy part of this problem of eczema, that is, the treatment of the amenable cases.

ECZEMA AMENABLE TO EXTERNAL TREATMENT.

General Directions. Let us bear in mind always that eczema is an inflammation, and like all inflammations, demands rest and protection from harm; and in this specific instance protection from harm means guarding the skin from all physical and chemical irritants, including water. If we are dealing with an individual who must continue his daily task and who, therefore, must of necessity wash, let us appreciate that this necessarily frequent evil can be mitigated somewhat by adding cornstarch or bran to the water, by regulating the heat of the water to that of the external body temperature, by using a superfatted-coldcream soap, and by drying the skin as one would blot ink with blotting paper. Let us warn our patient to protect his affected hands with frequently sterilized gloves. Let him use cotton gloves for light dry work, dogskin gloves for heavy dry work, and loose-fitting rubber gloves, well and constantly powdered, for wet work.

Of course these directions are intended for the individual who must continue his work, but it goes without saying that such an individual will be cured comparatively slowly and that he certainly increases the risk of becoming what I have termed an unamenable case.

Intertrigo. The erythematous condition which occurs on contiguous surfaces as a result of heat plus stationary urine, feces, or perspiration is very easily managed by sufficient and gentle bathing with a mild soap and lukewarm water; by thoroughly drying, by patting rather than by wiping, with a sterile absorbent material; by dusting into the folds of the skin a well-made, borated talcum powder; by changing clothes the moment they are soiled; and, finally, by forbidding too many and too warm clothes. The overdressing of young children is happily passing in this modern era of underdressing in adults, except among the poorer classes, where we still see babies swathed in yards and yards of unnecessary and dirty clothes.

Miliaria. Prickly heat, although perhaps not strictly speaking an eczema, should be included here. Once more we are dealing with too great heat, either artificial or natural, and it behooves us to correct the former cause. Cut down the amount of clothing to the limit; favor rest during the heat of the day; limit the amount of heavy foods ingested; request frequent baths in cool water; and have ready at hand the well-known milky wash (acid carbol. 2, zinc. oxid. 16, aq. calcis 250); sop this on the moment the skin itches or prickles, and as soon as it dries dust on plenty of borated talcum powder.

Balanitis. This peculiar eczematous infection of the glans penis looks and is terrifying to the young boy, but it is, happily, a condition curiously amenable to the right treatment. If the physician is cognizant of black wash (hydrarg. chlorid. mitis 2, aq. calcis 250) and uses it in the correct way, balanitis melts away like magic. The cure of this disease can be hastened by the additional use of boric acid ointment, worn when the wash is not being applied. If balanitis becomes a recurrent trouble the child should be circumcised.

It is proper to pause here to interpolate a few remarks based upon a rather long experience with patients who have been treated by medical men who have not made a specialty of dermatology. The seemingly inevitable tendency of this large proportion of the profession is to use too strong applications, to employ advertised remedies, or to prescribe the proper remedies and fail to impress on the patient their proper use. This last shortcoming is especially evident in the treatment of moist dermatoses where we dermatologists are apt to suggest evaporating lotions and dusting powders and perhaps no dressings;

while the general practitioner may prescribe ointments and bandages; and the surgically inclined may wrap the part up in yards of dressings and in some cases even apply oiled silk.

Let me repeat that the most serviceable proportions in ingredients in the very useful "white" wash and "black" wash are those which have been detailed above, and that the white wash should be reasonably fresh and sopped on at frequent intervals (in vesicular or bullous conditions as often as once an hour) and that the black wash should be laid on the affected part by means of a thin piece of linen or cotton for fifteen minutes twice or three times a day. These are the best methods for the use of these two valuable and serviceable lotions, and yet I have frequently seen them both used as poultices and have had the attendant physician describe their effect as useless. A large part of the success of dermatological practice depends upon the knowledge of detail of the physician and upon the implicit coöperation of the patient.

Paronychia. Here again is an eczema-like infection which may well be mentioned in this connection. The treatment of this at times painful condition is really that of balanitis and it is surprising to note the ready response of this apparently deep infection to the proper application of black wash plus boric acid ointment (acid. boracic. 2-4, adipis benzoat. 30) under a thin "cot," with or without the addition of salicylic acid, plus the absolute cessation of all manual work with the affected finger, and the forbidding of contact with all substances save those described.

Eczema Impetiginosum. Once more we are dealing with a condition which in a true sense may not be eczema at all but a condition which cannot objectively be differentiated from that elusive quantity known as eczema. The instinct of the trained man in these cases is to look at once for the presence of pediculi or their ova. If any of these foreign bodies are detected, the simplest remedy in boys or in young girls is to cut the hair short, thus getting rid at one fell swoop of the whole etiological question. In older girls and in all children in the winter months this radical procedure is not practicable and we must resort to the tedious application of crude petroleum (because this substance is efficient, cheap and easily obtained) to kill the living organisms, and to the still more vexatious process of ungluing the nits from their firm attachments to the hair shafts. This is a very troublesome question, for the keratin of the egg shells and of the human hair is very closely allied chemically, and it follows that what destroys the one will probably destroy the other. We must, therefore, limit our efforts to loosening the ova from their seats. Thus far chemists have not produced, or at least dermatologists have not discovered, the ideal solvent. At present we believe that xylene—a distillate of wood—is our best agent; but we must remember that this substance is somewhat irritating to the young skin, and we must actively bear in mind that it is highly inflammable. The application of xylene should, in consequence, be left to trained hands.

With the rapid or the gradual riddance of pediculosis from the hair, we begin simultaneously our attack on the cutaneous eruption. Here our methods are well defined. We must remember that staphylococci, or perhaps streptococci are at work, and we must advocate frequent gentle shampoos with soap and water; but here, also, precautions must be taken. We are dealing with a superficial infection and we must take care to limit this infection. Let us, therefore, recommend sterile gauze as a sponge and as a towel, and let us make use of a mild, powdered or liquid soap, rather than the family cake. With the areas properly washed and dried, we then apply boracic ointment (2 to 30) and within a few days we expect to see the process dry up and begin to disappear.

Eczema Madidans. This form of eczema represents the type that we encounter most frequently in childhood. It may begin within a few days or weeks of birth, and, if untreated or handled improperly, may lead to the variety of the disease we all dread—the type which I have earlier this evening designated "unamenable." Up to within a few years even skilled dermatologists feared this type of infantile eczema, for we knew that most of these cases would defy our best and most painstaking treatment. We still recall the first two winters and the intervening summer of these children's lives, the impossibility of their bathing, the scratching and tearing of their skin, the writhing of their heads and bodies, their necessary confinement under masks and safety-pins, the boxing gloves for their hands, the stiff cardboard for their elbows, their necessary confinement to the house in the cold months of the year, their inability to dig in the summer—all in all a hideous nightmare to us all, patients, parents and doctors alike.

Now, fortunately, this prolonged and distressing experience is for the most part banished from our lives, for we have discovered a remedy which has revolutionized this part of our practice, and the large majority of these children are cured, and cured within a comparatively few weeks. This remedy lies in the proper use of crude coal tar, the by-product of the manufacture of coal gas. This is an inky black, thick, barely fluid mass which smells somewhat of gas. It is essentially a crude substance, varying, of course, with the type of coal from which it is derived. I have used it in great quantities in public and private practice, and in properly selected cases its effect is really wonderful. It is, indeed, no exaggeration to state that its use has entirely altered the treatment of moist eczemas in its various types. Strangely enough, there is practically no reverse to this brilliant picture—in other words, save for an epidemic of three cases, I have never known this drug to do any harm in my hands.

Brocq of Paris was the probable discoverer of the therapeutic value of this substance, and he advocated its use in pure strength in the weeping, localized eczemas of adult life. We have extended its uses by modifying its manner of application, until now we prescribe it wherever we can possibly find any excuse—that is, in any eczema which shows any sign of moisture. Experimentation has proved that in its pure state it is advantageously used only on the raw surfaces of the adult disease; in childhood we prescribe it in the strength of one-half drachm to the ounce of zinc paste (crude coal tar 2, zinc. oxid. 2, amyl. maidis 16, vaseline 16). This still black mass is smeared thickly on the face or scalp or hands night and morning by means of a wooden throat stick, and no dressing whatever is placed over it. Every day the old paste is removed gently with the aid of soft gauze and oil of sweet almonds, and the fresh applications are made until the disease is cured or until we find we are dealing with an unamenable example of the disease.

There are three minor drawbacks to this otherwise almost perfect medicament: 1. It is very dirty and of course stains badly. Linen or cotton should never be washed with soap or water without first rubbing the soiled fabric well with lard—otherwise an indelible battleship-gray results. 2. Where there is hair, the crude coal tar is likely to produce follicular pustules. Therefore—and this rule is particularly pertinent when vernix caseosa is present—cut all hairs as closely as possible and as frequently as necessary before applying the drug. If pustules develop, cease all applications in their immediate vicinity until these intercurrent lesions have disappeared. 3. Crude coal tar will not tolerate, that is, in my hands, the synchronous use of any other drug. In other words, don't try to use another and more esthetic application by day; use nothing at all, or, best of all, continue the application of the crude coal tar day and night until the disease is wholly well, or until you find that it cannot get well by this means. You would treat a broken leg or a severe systemic disease throughout the twenty-four hours, surely, and, therefore, try to convince your frequently recalcitrant patient that eczema requires all the care it can get. You are handicapping severely your patient and yourself if you don't exhibit a little backbone in such circumstances.

These three are the only difficulties in the use of this otherwise splendid drug—a drug which has meant much to my patients and to my peace of mind and satisfaction in the last few years.

Eczema Papulosum. This is an infrequent type of the disease, and especially uncommon in children. If confronted with this variety of the process, don't use ointments or pastes. Prescribe washes, and, if successful, be careful not to stop half way in the course and add or substitute any greasy substances. A very good wash for the acute cases is as follows: amyl. maidis 25, talci 25, glycerin. 20, aq. saturnin. 100, aq. destillat. 100; and for the chronic examples: liq. carbonis detergent. 20-30, aq. destillat. 250.

Eczema Squamosum. For the dry, finely scaling type of the disease, mild ointments do very well. Remember the rôle that cold, dry weather or hot, dry weather plays in this form of the trouble. Remember, also, that eating corn off the cob is a not infrequent cause of dry perioral eczema. A very useful ointment is the following: acid. salicyl. .65, bismuth. subnitrat. 2-4, ung. aq. rosae 30.

These, then, are usually successful remedies to apply when we are confronted with amenable eczema in one or more of its many various phases. If we are to succeed in our efforts we shall know it within a week or two. If we find that we are to fail, then we must make up our minds that we must call to our aid other methods than the simple applications of external remedies.

ECZEMA NOT AMENABLE TO EXTERNAL TREATMENT.

So far as I can judge there are no outward differences between individual examples of eczema amenable to expert external care and those which are to prove unamenable. Even in cases which have lasted for years the proper applications may prove curative in a comparatively short time; but of course the longer any dermatosis has continued the poorer the prognosis—that is usually a safe guess.

During the last few years it has been my custom, as stated above, when confronted with an unamenable example of eczema of any type, to have food tests and stool examinations made, and in the long lists which follow, the inquisitive and faithful reader will note the results of these inquiries.

As all of you may not be familiar with this work, allow me to mention briefly the technic adopted in the skin tests. In a certain number of patients the skin was delicately broken by the rotation of a dental burr, while in others an exceedingly superficial incision was made with a clean, sharp scalpel. The latter method was finally adopted because it produced less artificial disturbance in the controls of the factitiously urticarial subjects. The flexor surface of the arms of the affected subject was cleaned, two parallel rows of four or more incisions were made, and into the incisions of one row were gently rubbed the particles of food to be tested, while the others were left undisturbed and served as controls. The arm was observed at intervals up to a half hour, and a slightly positive reaction was considered to consist of reddening and infiltration; a positive reaction of definite papulation and a double positive was recorded when these characteristics were still further accentuated.

During my first and second years only raw food types were inoculated. Milk freed from its fat content was chosen to represent the most important food of childhood, salt-free butter to represent fats, egg albumin to represent proteids, and lactose or oatmeal water to represent the sugars and starches. As experience grew, it was learned that an individual might be susceptible to only one or to more of a certain group of our food substances, and so the tests were extended to many individual representative foods. For this work one of two methods was adopted—either the so-claimed proteids of foods, as dispensed by a certain chemical company, were used, or the articles of food were prepared according to the formulae adopted by Dr. J. A. Turnbull.

By one of these latter methods we have tested many individuals with the following substances: beans, wheat, barley, rice, oats, rye, lentil, corn, buckwheat, pea, turnip, cabbage, carrot, tomato, squash, potato, parsnip, grapefruit, strawberry, egg white, lactalbumen, beef, lamb, pork, and chicken.

The professionally prepared "proteins" have been given a thorough trial, and in a later series were compared in the same individual with the raw product method, but the conviction was finally borne in upon me that they are not reliable. My own trials of foodstuffs, prepared according to Dr. Turnbull's methods, are not sufficiently numerous to be of any value, but it is evident that he and Dr. Goodale and other investigators have faith in them, at least in urticaria and asthma and hay fever.

For those who are interested in this modern theory of eczema I have introduced the method of food preparation for the cutaneous tests adopted by Dr. J. A. Turnbull and the procedures in stool examination followed by Dr. L. W. Hill.

PREPARATION OF FOODS AS TESTING MATERIAL.

1. Render food to a fine mass, add water and allow to stand in a cool place for two days.
2. Filter and to the watery extract add four volumes of 95% absolute alcohol. The alcohol throws down a precipitate.
3. Filter and wash the precipitate: (1) with normal saline solution, (2) with 95% alcohol twice, (3) with ether twice, and (4) allow to dry in a powdered form.

This is the method adopted by Dr. J. A. Turnbull, who is devoting much time to the subject of food tests in urticaria, asthma and hay fever.

FOOD TESTS.

Case 1. Male, aet. 4½ years. Disease present since birth. Treated for four years. Eruption consists of oozing redness of face and scalp, at times impetiginous. Von Pirquet negative. Food tests negative.

Case 2. Male, aet. 8 weeks. Child breast fed. Has an occasional green stool. Scalp shows a large cradle cap, and for five weeks there has been a redness and scaling of forehead and side of scalp. Tests: albumin ++, butter +.

Case 3. Male, aet. 7 months. White cell count 20,000; eosinophiles 1%. Stools are yellow and sour and show many large, coarse, white curds. Infant breast fed for two months and afterwards according to milk formulae. Disease present for six months. The scalp, forehead and cheeks are moist, red and crusting. With the use of crude coal tar and suitable changes in the milk formulae, disease was cured in twenty-five days. Tests: milk ±, albumin +++.

Case 4. Female, aet. 8 years. Leucocytes 6,000-11,000, hemoglobin 75-90%, eosinophiles 2-3%. Stool shows some fat but not in excess. Disease present for two years. Eruption was finely papular for weeks and later became erythematous and impetiginous, affecting scalp, face, hands, arms, neck and upper thorax, and accompanied by marked adenitis. Rebellious to many forms of treatment, including the use of x-rays and auto-serum. Aggravated by a non-nitrogenous diet, and somewhat benefited by a low fat régime. Tests: milk +, albumin +.

Case 5. Female, aet. 16 months. Whole lower face a mass of moist crusts. Tests: milk ±, butter ±, lactose +.

Case 6. Male, aet. 11 months. Child breast fed. Disease evident for ten months. Forehead, cheeks, chin and wrists red and furfuraceous. Tests: milk ±, albumin +.

Case 7. Male, aet. 3 years. The disease has been present on and off for two years and now the cheeks are pink and scaling and the trunk and back of the thighs show grouped crusting papules. Tests: milk+, albumin ±.

Case 8. Female, aet. 6 years. Disease has been present ever since birth, but child has not been treated. The hair is like tow and the skin of the face and of the bend of the elbows is infiltrated and excoriated. Tests: butter ±.

Case 9. Male, aet. 4 months. There are scattered macules on the trunk, and the skin of the palms, flexor surface of the arms, lower abdomen, penis, scrotum and thighs is bright red and moist. Tests: milk ±.

Case 10. Female, aet. 6 months. At age of one month the whole body was affected. Child entirely breast fed. Now the skin behind the ears and in the folds of the neck is red and moist. Tests: milk ±, albumin ±, butter ±, control of albumin ±.

Case 11. Male, aet. 4 months. The baby is breast fed and has bottled milk as well. For two months the eruption has been present, and consists of an extensive cradle cap and redness, scaling, and, at times, moisture behind the ears and on the left cheek. Tests: milk +, albumin ±.

CASE 12. Male, aet. 2 years. Since early life the skin has been "broken out." The child was nursed only ten days. Eruption comes and goes; better in summer. There is much itching and the face, hands and arms show erythema, excoriations and bloody crusts. Tests: milk±, butter ±.

CASE 13. Female, aet. 3½ months. Breast fed and constipated. The face, forehead and scalp are red and vesicular; the scalp is greasy as well. Tests: milk +++, albumin ++, butter +++.

CASE 14. Male, aet. 14 years. Duration three years, and the disease is always worse in cold weather. The face and arms are thickened, lichenified, excoriated and crusted, and there are excoriations over the rest of the body. Tests negative.

CASE 15. Female, aet. 14 years. The disease has lasted for one year, and now consists of a leathery, yellow-red, excoriated condition of the face and hands. Tests: milk ±, albumin ±, butter ±.

CASE 16. Female, aet. 14 years. The disease appeared at the age of three months and has persisted intermittently ever since. Today the flexures of the elbows and knees, the forehead and the neck are pink, infiltrated and dry. Tests: milk +, albumin ++, butter ±.

CASE 17. Female, aet. 11 years. On the left arm there are three pink-red eczematous patches three-quarters of an inch in diameter, and the patient states that she has shown the same condition for the last few winters. Tests: milk +, albumin ±, control of albumin ±.

CASE 18. Female, aet. 10 years. Leucocyte count, 10,000, hemoglobin 75%. Eczema has existed for three years, principally on the face and genitalia. The child is poorly nourished. While under observation in the skin ward, on several occasions last autumn, the disease manifested itself primarily on the scalp, in the eyebrows and on the neck in the form of redness and adherent crusting. There was discharge from the ears and nose, eventuating in an attack of erysipelas. This patient was benefited more by autogenous vaccines than by any other form of treatment. Tests: milk +, butter +, lactose +. The child would be discharged free from eruption, but would return in a few weeks as bad as ever.

CASE 19. Female, aet. 2 years. Leucocyte count 10,000, hemoglobin 75%. The child was breast fed for four months and then given cow's milk and eggs. At the age of two months a lesion appeared on one heel and eczema developed and has persisted ever since. The scalp is crusting and caked; the face and ears are red, oozing and bleeding; the eyelids are stiff; the back is red and stiff; the chest and abdomen are rough and papular and excoriated; the thighs and groins are red and infiltrated; the popliteal spaces are reddened. The feces showed a moderate excess of fatty acids and soaps. The child was put on a fat-free diet and treated externally, and in less than three weeks all areas, save the scalp, were healed. This region required six additional weeks to be cured. Tests: egg albumin +.

CASE 20. Male, aet. 3 years. Eczema for one year, and there are now oozing lesions on scalp, abdomen and genitals, with some papules on trunk. The feces show an excess of fat. White count has varied from 10,000 to 37,000. Hemoglobin 75-80%. The eyes are prominent, the tonsils are enlarged, and there is a general adenitis. Percussion and radiograph reveal an enlarged thymus gland. Two x-ray exposures of 30 milliampere minutes, 70,000 volts, with aluminum filter, produced a decided subsidence of the thymus and of the leucocytes. Tests: albumin +, fat +, lactose +.

CASE 21. Male child. Disease off and on for four years. The stool examination was negative. Tests: milk +. The patient was deprived of milk in all its food, and in one month the eczema was apparently cured.

CASE 22. L. W., aet. 14, schoolboy. Duration of disease, three years. Thickening, lichenification and excoration of body generally. Food tests negative Jan. 21, 1915, and again Nov. 2, 1915.

CASE 23. W. F., aet. 13, schoolboy. Treated off and on for eleven years. Present eruption consists of small pinhead papules with punctate excoriations. Chest, axillae, abdomen and groins affected. Food tests negative.

CASE 24. J. B., aet. 6, schoolboy. Disease six years in duration. The pubes and adjacent thighs are red, papular and thickened; the flexures of forearms are red, fissured and oozing. Food tests negative.

CASE 25. B. E. G., aet. 7, schoolgirl. Both ears are red and oozing. Food tests negative.

CASE 26. R. S., aet. 2 months—a boy with nummular areas of erythema, infiltration and scales over the head, trunk and limbs of four months' duration. Food tests negative.

CASE 27. B. S., aet. 1 year; a breast-fed and very fat girl who has had the disease practically since birth. The Children's Department suggests that some internal secretion is upset. The cheeks and chin show fine, pink papules and the groins are red and moist. Food tests negative.

CASE 28. W. H., aet. 15 months. The disease began at the age of six weeks and has persisted. There has been much oozing and crusting on scalp, face and arms. Food tests negative.

CASE 29. G. E., aet. 7 months. The eruption began six months previously, and at the time of the tests there were papules on the buttocks. Food tests negative.

CASE 30. H. J. W., aet. 4 months. There are patches of infiltration, exudation and crusting on the cheeks and extensor surfaces of the arms of several weeks' duration. Food tests negative.

CASE 31. J. G., aet. 6 months, breast-fed girl. Duration of disease, three months. The face is erythematous, oozing, crusting and fissured. Food tests negative.

CASE 32. B. C., aet. 15, schoolgirl. Disease has been intermittently present for ten years. Present attack is three months old and consists of redness and fine vesiculation with some crusting on the palmar surfaces of the right finger. Food tests negative.

Case 33. G. H., aet. 1 year. Disease present almost since birth. Now behind and under the ear is an erythematous, moist, sharply defined area. Food tests negative.

Case 34. S. F., aet. 3 months. Duration, one month. Generalized erythema and mild exudation. The baby is breast fed. Food tests negative.

Case 35. S. R., aet. 13 weeks. Breast fed. For two weeks the cheeks and forehead have shown minute papulation and furfuration. Food tests negative.

Case 36. D. B., aet. 4 months. Disease present for three months, and at present shows a mildly exudative condition of the face and neck. Food tests negative.

Case 37. T. G., aet. 7 months. Dirty yellow crusts on both cheeks for the last two weeks. Food tests negative.

Case 38. J. J. W., schoolboy, aet. 9. Child painted himself red and the eruption appeared and has persisted. Whole face and arms are covered with an almost coalescent, excoriated, papular eruption. Food tests negative.

Case 39. J. R., aet. 1 year. Breast fed. Face and ears have been red, excoriated and exuding for one month. Second attack. Food tests negative.

Case 40. M. G., aet. 11, schoolgirl. Eczema "for years." The skin at present is generally red, thickened and fissured. Face erythematous and scaling. Food tests negative.

Case 41. J. T., aet. 20 months. Duration three months. There are crusts and fissures on the face and scalp. Food tests negative.

Case 42. H. S., aet. 3 months. Six months' duration. The forehead and cheeks are oozing and crusting. Food tests negative.

Case 43. E. B., aet. 6 weeks. Breast fed and vomits after feedings. For two weeks there have been miliary papules over both cheeks and on scalp. Food tests negative.

Case 44. M. G., aet. 9 weeks. Breast fed. The cheeks are finely papular. Food tests positive.

Case 45. J. F. K., aet. 4. The eruption appeared one week after birth and now appears as fine, bright red papules on the scalp, neck, chest and buttocks. Food tests positive.

Case 46. E. M., aet. 6 months. For four months the cheeks and scalp have shown deep excoriations and bloody crusts. Two months later the scalp was well and the cheeks dry, pink and scaling. Food tests positive.

Case 47. F. T., aet. 6. Disease has persisted six months, and at present the skin of eyelids, ears and scalp is infiltrated, crusting and excoriated. Food tests positive.

Case 48. I. R., aet. 3½ months. The first child had eczema also. The patient is breast fed, and for two months the cheeks, forehead and anterior part of the scalp have shown scattered, coalescent papules, some of which are excoriated and oozing. Food tests positive.

Case 49. T. K., aet. 7, schoolboy. Duration, three weeks. A prurigo-like eczema. Food tests positive.

Case 50. F. L., aet. 10 months, and bottle fed for last four months. Following an earache of one week without any applications, the skin around the left ear and of the cheek broke out into papules and masses of redness and crusting. Food tests positive.

Case 51. M. C. S., aet. 12, schoolgirl. The skin is generally dry and harsh; the scalp is dry and finely scaling, and there are pinhead papules generally over the whole body. Food tests positive.

Case 52. I. S., aet. 8 months. Bottle fed. Two weeks' duration. The skin of the back and flanks is very red and finely papular. Food tests positive.

Case 53. H. M., aet. 7 months. Breast fed. Eczema for eight weeks. At first vesicular, and now the skin of the face is reddened and thickened. Food tests positive.

Case 54. N. H., aet. 5 months. Breast-fed boy. The disease has been evident for five weeks. The face and scalp are a mass of excoriations and crusts. Albumin +.

Case 55. H. K., aet. 5 months. Breast fed. Intertrigo for three months, general eruption for two days, consisting of flat-topped, small-sized, pink papules on the forearms, trunk and legs. Fat +, starch +.

Case 56. R. H., aet. 16 months. Second attack similar in nature to the first, one year previously. The face, back of hands, and bends of knees are red, moist, oozing and crusting. Milk +, egg albumin +.

Case 57. I. M., aet. 3. Duration, perhaps a year. Both arms are raw. Child much neglected. Starch +.

Case 58. M. L. R., aet. 8 months. Breast-fed boy. Eruption present almost from birth. The buttocks show fine papules and excoriations. The mother says that the baby always breaks out after eating eggs. Egg albumin +, wheat +.

Case 59. O. C., aet. 10. Schoolboy. There are infiltrated and excoriated papules on the deltoid areas and on the abdomen. Albumin +.

Case 60. N. L., aet. 16 months. The cheeks and ears are erythematous and mildly exudative. Albumin ++.

Case 61. D. J. S., aet 3 months. Breast-fed boy.

Duration, two months. Both cheeks show indefinite, pink, dry and scaling areas. Fat +.

CASE 62. M. L. P., aet. 1 year. Breast-fed boy. The scalp and face are red and moist. Albumin +++.

CASE 63. R. M., aet. 7 months. Duration, six months. A generalized vesicular eczema, most emphasized on the face, scalp, neck and upper chest. Albumin +++.

CASE 64. M. S., aet. 6 months. The skin of face, ears, trunk and arms is brilliant red, oozing and excoriated. Albumin +.

CASE 65. I. S., aet. 3. This girl has spent more or less of her life in the skin ward. The whole body is red, at times moist, at others dry and scaling. Albumin +.

CASE 66. M. C. S., aet. 12. Schoolgirl. The skin is generally dry and harsh and easily irritated. There are pinhead papules over the whole body. Fat +, starch +, milk +.

CASE 67. S. H., aet. 3 months. For two weeks the scalp and upper part of the cheeks have been erythematous, vesicular and crusting. Albumin +.

CASE 68. H. V., aet. 8 months. Duration, three months. Subacute exudative condition of the face, scalp, neck and upper chest. Albumin ++, starch +.

CASE 69. R. C., aet. 2 months. Breast-fed girl. Vulvar region is claret-red, edematous and moist. Fat +.

CASE 70. E. V., aet. 15 months. Duration, 12 months. The child is nursed and given Mellin's Food, cake, bread, etc. The cheeks and chin are red, infiltrated and crusting. Food tests (raw*): egg +. After one week's elimination of egg in all forms the skin is merely erythematous.

CASE 71. R. D., aet. 4 months. Duration, 3½ months. The child is breast and bottle fed. Infiltration, fissures and crusts appear on the head and trunk. Food tests (raw): milk +.

CASE 72. J. T. McC., aet. 11. Schoolboy. There was an attack of eczema six years previously. Oozing and crusting now appear on scalp, on forehead and behind ears. Food tests (proteids†): pork and tomato ±.

CASE 73. I. F., aet. 12. The disease started ten years previously as an impetiginous eczema, following pediculosis, and has continued down to the present day. Under our care in the hospital ward, the child has promptly recovered but the disease has invariably returned when the child has gone home. Food tests October, 1915 (raw): egg +, butter ±; September, 1916 (proteids), all negative; November, 1916 (proteid), wheat +, tomato +, and egg +.

CASE 74. C. T., aet. 5. Duration, 4 years. Oozing and crusting condition of the scalp. Food tests (proteids): corn ±, peas ±, strawberries ±.

CASE 75. M. S., aet. 10 months. Duration, 8 months. Multiple excoriations of face. Food tests (proteids): pork ±, egg +, beef ++. Disease continued with ups and downs. The child was referred to the pediatric department, and their last record states that the baby vomited after nearly every feeding.

CASE 76. F. S., aet. 10 months. Duration, 5 months. Excoriations on the cheek, and a moist, infiltrated, reddened area on the trunk. Food tests (proteids): lactalbumen ±, casein ±, barley ++. This baby subsequently visited a children's hospital and was given barley water, and returned to us soon after with small indefinite papules on the face, trunk and extremities.

CASE 77. S. G., aet. 2 years. Duration, 1½ years. A moist eczema of face, neck, scalp, flanks, back and legs. Food tests (proteids): corn ++, wheat +, rice +.

CASE 78. J. R., aet. 3. Duration always. The face is moist, red and crusting. Food tests (raw): all negative.

CASE 79. M. P., aet. 19 months. Duration, 14 months. The child was breast fed for 11 months. Food tests (raw): egg ++, oats +.

CASE 80. J. B., aet. 7 The disease began at the age of one month. The arms, flanks and lower legs are moist, fissured and crusting. Food tests (proteids): peas ±, oats ±, egg +.

CASE 81. R. S., aet. 3. Duration, 8 months. The disease began on the scalp and eyelids. The mother noticed that the ingestion of tomatoes and strawberries always produced exacerbations. Food tests (proteids): egg ±, casein ±.

CASE 82. R. L., aet. 2 years. Duration of disease, one month. The skin is red, infiltrated and dry. Food tests (proteids): all negative.

CASE 83. Y. C., aet. 3 years. Three weeks' duration. The child was nursed up to the age of two years. The cheeks and thighs are dry and scaling in patches. Food tests (raw): casein +.

CASE 84. J. C., aet. 2 years. Duration, 11 months. There are dry and scaly areas, especially about the shoulders. Food tests (raw): all negative.

CASE 85. K. K., aet. 12. Schoolgirl. Duration on and off for 7 years. The skin is generally thick, dry and excoriated. Food tests (raw): all negative.

CASE 86. E. S., aet. 13 months. Duration, 4 months. The child was nursed for eleven months. The forehead is infiltrated, red and excoriated, with a tendency toward papulation. Food tests (raw) all negative.

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* (Raw) means that raw materials (egg albumin, fat-free milk, lactose, or oatmeal water) have been used as testing agents.

† (Proteid) signifies the use of the professionally prepared so-called proteids.

Case 87. J. K., aet. 1 year. Duration, 6 months. The face and scalp are covered with pea-sized, brick-red, rather moist, somewhat excoriated maculo-papules. Food tests (proteids): rye ++.

METHODS OF EXAMINATION OF FECES.

Macroscopic.

1. Note the color, odor, and consistency.
2. Look for mucus and for food residue, such as cellulose from vegetables, meat fibers, or gelatinous masses of undigested starch.
3. Reaction to litmus. Of considerable value in babies, but of little importance in adults.

Microscopic.

1. To disclose neutral fat, rub up a small amount of feces with water on a glass slide and add a few drops of saturated solution of sudan iii. Neutral fat globules stain a bright orange red. Any neutral fat is abnormal.
2. To determine "total" fat add 1-2 drops of glacial acetic acid and a few drops of sudan iii and heat. In this way all fat present is broken down into globules of fatty acids which stain a bright orange yellow. All stools contain a not inconsiderable amount of "total" fat, for which there is no acknowledged standard of measurement. Experience alone determines one's own standard.
3. To discover starch, rub up a small portion of the mass with water and add Lugol's solution. Starch granules become blue, and anything more than the smallest amount of starch is to be considered abnormal.

Such are the methods adopted by Dr. Lewis Webb Hill, to whom I am greatly indebted for many of these examinations.

STOOL EXAMINATIONS.

Case 1. A child of three years, living upon an essentially adult diet. The disease had been present for eighteen months, and at entrance to the hospital the face, neck, axillary regions and chest were moist and oozing. The stools showed a moderate amount of free fat and soap and much coarse vegetable matter. After a two weeks' suspension of all fat from the diet the face was almost free from involvement. The child was then given the regular house diet, and skin and disposition rapidly reverted to the conditions observed at entrance. Fat-free diet was again instituted, and twenty-five days later the child was discharged free from all outward manifestations of her disease, save a slight scaliness behind the ears.

Case 2. The child had been allowed to eat everything. Six months earlier a red area developed on the face, and was treated without success by several doctors. On entrance, the whole face and neck were covered with moist crusts, and the body showed generalized but isolated areas of infiltration, oozing and crusting. The stool was dark brown, ill-smelling and alkaline and revealed a large amount of free fat and soap. A fat-free diet was administered and in sixteen days fat had disappeared from the stools and the skin was greatly improved. Unfortunately, the parents then took the child away.

Case 3. A child of four years showed on his face dry, cracking lesions and on his body a papular eruption. There were no fats in the feces but large numbers of vegetable fibers and cells, algae, cellulose and fruit and vegetable débris. The patient was put on a modified house diet, and in eleven days there were no longer signs of eczema. The child was then given a weighed carbohydrate diet, and one week later the eruption was as bad as at entrance. The proper diet was restored, and in two weeks the child left the hospital apparently well and was still free from eczema when it reported, two weeks later, the proper diet having been adhered to.

Case 4. D. F., aet. 5. Eczema has been present for seven months and is rather generally distributed. The skin is slightly reddened, roughened, infiltrated and fissured and a few papules are evident. Stool negative.

Case 5. J. R., aet. 20 months. Breast-fed girl. Child observed in second attack. The face and ears are red, excoriated and exuding. Nits are present. Food tests negative. Stool negative.

Case 6. M. L. P., aet. 1 year. Breast-fed boy. Face and ears show pink-red papules. Albumin +++. Stool negative.

Case 7. M. S., aet. 11. Schoolgirl. Eczema "for years" and at present the face is red, dry and furfuraceous and the skin of the body is generally red, thick and fissured. Food tests are negative. Stool negative.

Case 8. H. M., aet. 9 months. Duration of disease, 8 months. Breast fed. The skin is reddened and thickened, and in places moist. Food tests are all positive. Stool negative.

Case 9. R. M., aet. 7 months. Disease present for 6 months, and consists of generalized vesiculation, especially on scalp, face, neck and upper chest. Albumin +++. Stool negative.

Case 10. P. F., aet. 11 months. Disease present for ten months. Breast fed for 3½ months. Face and left shoulder show a few persistent areas of red, slightly infiltrated, dry and slightly scaling skin. The stool shows an excess of fat.

Case 11. M. S., aet. 6 months. Face, ears, neck, chest, trunk and arms are brilliant red, oozing and excoriated. Albumin +. The microscope shows a slight amount of fat and a considerable degree of soap.

Case 12. I. S., aet. 3. A frequent visitor to our skin ward. The whole body, including the face and scalp, is red and infiltrated, in places dry and in places moist. Albumin +. Macroscopically a typical soap stool; microscopically there is a considerable amount of neutral fat and an excess of soaps.

Case 13. M. C. S., aet. 12. A schoolgirl. The skin is generally dry and harsh and easily irritated. The scalp is dry and finely scaling. There are pinhead papules generally over the whole body. Fat +, starch +, milk +. Microscopically the stool shows a moderate excess of soaps.

CASE 14. J. T., aet. 20 months. Disease of 3 months' duration. Greasy crusts on scalp, and crusts and fissures on face. Food tests are negative. Microscope shows a moderate excess of soaps but no free fat.

CASE 15. E. G., aet. 7 months. Breast fed. Duration, 2 months. Over the whole face are thick, dirty, heaped-up crusts and excoriations. There are also a few papules on both arms. Nov. 30 and Dec. 8 and 13, a moderate amount of soaps were found microscopically.

CASE 16. T. J. G., aet. 21 months. Disease evident for 18 months. The right side of the face is pink and moist and shows a few papules. Albumin +. The stool is strongly acid, loose, foul, brothy, and shows gas bubbles. A few neutral fat droplets are present as well as an excess of soap. A fermentation type of stool, with moderate fat and sugar indigestion.

CASE 17. S. H., aet. 3 months. Duration, 2 weeks. Scalp and upper cheeks are erythematous, vesicular and crusting. Albumin +. The stool is soft, yellow, very acid and contains many soft small curds, considerable mucus and considerable fatty acids and soaps.

CASE 18. H. S., aet. 3 months. Duration of disease the same. Forehead and cheeks are oozing and crusting. Food tests are negative. Stools are rather watery, brownish-yellow, slightly acid, and contain a small amount of fat.

CASE 19. I. S., aet. 8 months. Bottle fed. Disease 2 weeks' old. Skin of back and sides very red and shows pinhead papules. Food tests are all positive. Five examinations of the stools revealed many soap suds, some soft curds, some mucus. The sixth test, when the eczema was practically gone, revealed a normal stool.

CASE 20. E. B., aet. 6 weeks. Breast-fed girl. Two weeks' duration. There are minute miliary papules over both cheeks and on the scalp. The diaper region is generally reddened. Food tests are negative. Stool is spongy and yellow; contains curds and a moderate increase of neutral fats and soaps.

CASE 21. C. F., aet. 6 months. A girl, breast fed for six weeks only. Eczema present for three months. The cheeks are fiery red and moist. The hands, forearms, lower legs and feet show intracutaneous papules. The stool shows a very rare neutral fat droplet and a moderate excess of soaps and fatty acids.

CASE 22. R. F. G., aet. 6 months. A breast-fed girl. Duration, 3½ months. The cheeks show small areas of redness, moisture and excoriation. The stool is very acid in reaction and shows a moderate excess of neutral fat and a very large excess of soap and fatty acids.

CASE 23. E. L. Y., aet. 2 years. Duration, approximately 18 months. At first marked egg anaphylaxis was present but eventually outgrown. For last few months the disease has been present in the scalp, which at present is buried under a mass of white, granular scales. Stool shows a large excess of soap.

CASE 24. F. G., aet. 1 year. Scalp, face, lower arms and back are red, infiltrated, oozing and crusting. Food tests are all positive, Oct. 20, and all negative two days later. Stool shows a large excess of undigested starch.

CASE 25. H. V., aet. 8½ months. A breast-fed boy. Duration, three months. Scalp, face, neck and upper chest are mildly exudative. Albumin ++, starch +. The stool is green, loose, strongly acid, and contains a moderate excess of starch—"a typical stool of carbohydrate indigestion."

CASE 26. R. C., aet. 2 months. A breast-fed girl. Disease present since birth. The vulva is red, moist and edematous. Food test is positive to fat. The stool shows a typical fermentative diarrhea due to excessive carbohydrate fermentation.

CASE 27. Miss P. A., aet. 15, has a typical nummular eruption on the arms and legs, of two years' duration, and has consulted two other doctors. In these oval or circular, sparsely scattered areas the skin is infiltrated and finely papular. Dr. Hill reports: a loose, foul stool containing an excess of cellulose residue in the form of pieces of orange and gelatinous masses of vegetable material. Microscopically there is no excess of fat or of starch. A stool of cellulose indigestion, and the patient probably eats too fast and does not chew her food properly. She is unable to digest her coarse food. Such feces indicate inability to take care of starch if it is in the form of hot bread, large amounts of potato, etc.

CASE 28. Miss. E. A. C., aet. 15, developed eczema five years previously after an appendectomy, and now presents a lichenoid, excoriated eruption on the flexor surface of the upper and lower arms, over the scapulae and about the neck. Dr. Hanson reports: microscopically, no free fat or starch, but there are small amounts of soaps and undigested matter. Gas bacillus present. The test shows evidence of carbohydrate fermentation.

CASE 29. Miss M. E., aet. 7, presents a universally brown-red, leathery, and excoriated skin. The child has had eczema for 4½ years and is at present thoroughly exhausted mentally and physically from the intense itching and consequent loss of sleep. Dr. Hanson reports: no free fats or fatty acids, very little starch, but there is considerable cellulose and marked evidence of carbohydrate indigestion. Gas bacillus present. The movement not formed; the odor rather bad.

CASE 30. F. L. Y., aet. 5. Disease began at age of six months, and has persisted, despite treatment from a pediatrist. At present there is a scaling area above the right eyebrow and many finger tips are dry, red and cracked. Dr. Hill reports "a very peculiar stool. Macroscopically the stool is hard, formed and large, and looks normal, but when broken apart is seen to consist almost entirely of green peas, most of which are not at all digested. Microscopically, there is no excess of fat, but naturally a large excess of starch." One week after the reformation of the diet the mother reported that a previously foul breath had become sweet; that a nervous, irritable disposition had become docile; that chronically pale cheeks had become pink; and that the eczema had decidedly improved.

Case 31. V. T., aet. 14 months. The child was nursed for three months, and then oatmeal water, eggs and various patent foods were added to the diet. With these changes in the diet, eczema developed, and with the administration of eggs vomiting and convulsions appeared. The face is red and covered with fine excoriated papules. Stool: soft, grayish brown, acid and contains much cellulose; starch is increased in amount. The eczema cleared up within a week under proper diet.

RÉSUMÉ OF FOOD TESTS.

1. *Moist Eczema.*

Negative to all foods injected	14
Positive to one food injected	13
Positive to more than one food injected	22
Positive to egg albumen	23
Positive to salt-free butter	7
Positive to fat-free milk	11
Positive to oatmeal or lactose	6

Of those injected with the so-called proteins there were two children positive to each of the following substances: pork, tomato, wheat, corn and peas; and one positive to strawberry, rice, oat, casein and beef.

2. *Dry Eczema.*

Negative to all foods injected	7
Positive to one food injected	4
Positive to more than one food injected	9
Positive to egg albumen	4
Positive to salt-free butter	5
Positive to fat-free milk	5
Positive to oatmeal or lactose	0

Of those injected with the so-called proteins there were two children positive to casein, one positive to lactalbumen and one to barley.

3. *Papular Eczema.*

Negative to all foods injected	8
Positive to one food injected	1
Positive to more than one food injected	9
Positive to egg albumen	3
Positive to salt-free butter	2
Positive to fat-free milk	2
Positive to oatmeal or lactose	2

Of those injected with the so-called proteins, there was one child positive to rye and one to wheat.

RÉSUMÉ OF STOOL EXAMINATIONS.

1. *Moist Eczema.*

Stools negative	3
Stools containing an excess of fat or soaps	11
Stools containing an excess of starch	2
Stool containing an excess of cellulose	1
Fermentative stools	2

2. *Dry Eczema.*

Stools negative	2
Stools containing an excess of fats or soaps	3
Stools containing an excess of starch	2

3. *Papular Eczema.*

Stools negative	1
Stools containing an excess of fats or soaps	3
Stools containing an excess of cellulose	3
Stool containing an excess of starch	1

CONCLUSIONS.

At the end of three years of concentration on the subject of eczema and of working and pondering over one positive and two possible accessories to our therapeutic armamentarium, I feel justified in making the following deductions:

1. There are two great types of eczema,—those curable in the hands of an expert and those which resist even the most scientific care. These two classes cannot be distinguished objectively.

2. Crude coal tar when properly used is curative in the majority of instances of moist eczema, and has proved of inestimable value.

3. There is no doubt that eczematous individuals, both young and old, react positively in decided numbers to the food tests and stool examinations—in fact we have seen among the children described in this communication 66% of positive food tests and 81% of abnormal stools. Therefore, we do not hesitate to say that food plays some rôle in the abnormal composition of individuals afflicted with chronic, rebellious eczema.

4. Proper feeding, as indicated by food tests and stool examinations, is capable in very young children (who eat elemental food), of producing a cure or of paving the way for a cure in a decided majority of cases.

5. In older children and in adult life the same successful results have been obtained only in a small minority of the cases; but it is possible that this failure is due less to the value of this same knowledge than to the fact that the food of this class of patients is practically always a complex substance and hence incapable of such scientific and exact preparation as is possible in the comparatively simple modification of milk. Until, therefore, we are able by means of special diet kitchens, let us say, to synthesize the food of older children and adults, we cannot hope to make use of these two modern therapeutic adjuncts in our fight against unamenable eczema.

Original Articles.

LIPOIDS IN 131 DIABETIC BLOODS.

BY HORACE GRAY, BOSTON.

[From the Department of Biological Chemistry, Harvard Medical School.]

SYNOPSIS.

- Nomenclature
- Base table of data
- Specimens *vs.* cases
- Technique
    - Extraction
    - Bloor's fat method
    - Lecithin method
    - Cholesterol method
    - Time required for each method
- Formulae
    - Determined values
    - Calculated values
- Checks
- Discussion of results
- Clinical simplification
- Threshold
- Average and maximal diabetic values
- Plasma *vs.* corpuscles
- Anesthesia
- Sex
- Duration
- Prognosis
- Weight
- Dietary fat
- Fasting
- Acidosis
- Carbohydrate balance
- Blood sugar
- Corpuscle per cent.
- Cloudy plasma: lactescence *vs.* hyperlipemia
- Individual patients, instead of groups, in relation to some of the above factors.
- Clinical severity
- Summary

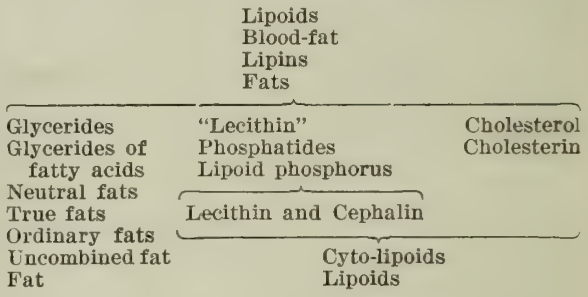
These analyses were undertaken as a continuation of the series of 38 reported by Professor Bloor September, 1916, on patients of Dr. E. P. Joslin. For the clinical data and much other assistance, I am indebted to the latter; and to the former for frequent and extremely obliging help and advice on the details of his methods.[1-8]

The study of patients from the dietary and metabolic viewpoints has produced blood micromethods for all four of the familiar food elements: protein (Folin), carbohydrate (Lewis-Benedict), fat (Bloor), and salt (McLean-Van Slyke). The first two of these are both generally used in hospitals and generally understood outside them. Neither the plasma-chlorides nor the lipoids, however, have yet received the general attention which they merit. In the case of the lipoids the cause has probably been fivefold:

1. The confusing nomenclature.
2. The confusing number of substances determined.
3. The confusing variation of methods with resultant varying values.
4. The recent improvement of methods.
5. The time required.

NOMENCLATURE.

The nomenclature has been recently discussed,[7] and will, therefore, be only graphically reviewed. Each vertical column consists of words used more or less synonymously, the first term in each being used throughout this paper.



The results are partly determined and partly calculated from the following three methods:

BLOOR'S FAT METHOD	LECITHIN METHOD	CHOLESTEROL METHOD
	giving respectively	
I. Total cholesterol II. Total fatty acids combined in *a* glycerides *b* phosphatides *c* chol.-esters	I. Lecithin II. Cephalin III. Other phosphatides	Total cholesterol including *a* free cholesterol *b* cholesterol as esters of fatty acids

Particular attention is directed to (1) the term "Bloor's fat-method," which has seemed preferable to Bloor's original name, "total-fat," so easily confounded with the name "total lipoids" (total ether soluble, aggregate fatty substances), and in fact amounting to only 91% of the latter "total"; also to (2) the use of "lipoids" for the fatty substances in general, and not in the restricted way as a synonym for "cyto-lipoids."

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[1] Bloor, W. R.: A Method for the Determination of Fat in Small Amounts of Blood, Jour. Biol. Chem., April, 1914, xvii, 377-384. This is the method which I have called Bloor's Fat-Method, throughout this paper.

[2] Bloor, W. R.: A. Method for the Determination of "Lecithin" in Small Amounts of Blood, Jour. Biol. Chem., August, 1915, xxii, 133-144. The $AgNO_3$ precipitation has been superseded by the method quoted below (6).

[3] Bloor, W. R.: A Simple Method of Converting the Duboscq Colorimeter into a Nephelometer, Jour. Biol. Chem., August, 1915, xxii, 145-149.

[4] Bloor, W. R.: Fat Absorption and the Blood Lipoids, Jour. Biol. Chem., November, 1915, xxiii, 317-326.

[5] Bloor, W. R.: The Determination of Cholesterol in Blood, Jour. Biol. Chem., March, 1916, xxiv, 227-231.

[6] Bloor, W. R.: Fat Assimilation, Jour. Biol. Chem., April, 1916, xxiv, 447-460. Includes revised Lecithin method.

[7] Bloor, W. R.: The Distribution of the Lipoids in Human Blood, Jour. Biol. Chem., July, 1916, xxv, 577-599.

[8] Bloor, W. R.: The Lipoids of the Blood in Diabetes, Jour. Biol. Chem., September, 1916, xxvi, 417-430.

The analytical and clinical data were collected in a table which was then used as the basis for all the later tables and deductions given below. Expense unfortunately makes reproduction of this table of basal figures out of the question. If any question should arise, I should be glad to give the actual pertinent figures from the table.

SPECIMENS VS. CASES.

The 131 bloods analyzed represent specimens, not patients, of whom there are 86 in this series. If Bloor's fat-method ("total-fat") be taken as a criterion, then the most similar values are found in 4 different *persons.*

Table I.

Similarity of Value in Different Persons.

Spec. No.	Name	History No.	
129	Ch	1086	1.9%
517	Em	1055	
522	Sw	1228	
558	La	1233	

Table II.

Dissimilarity of Values in Same Person.

History No.	No. of Spec.	Nearest	Farthest
La 1233	10	1.09 1.10	1.09 3.62
Cl 786	8	2.70 2.74	2.28 9.55
Co 610	5	0.97 1.03	0.97 1.56
Sw 1228	4	0.78 0.90	0.62 1.09
Mu 1070	4	0.66 0.67	0.66 0.95
Er 1213	4	1.42 1.45	0.74 1.52
Wa 1066	3	2.74 2.94	0.84 2.94
Ro 1196	3	1.01 1.18	0.79 1.18
St 914	3	0.88 1.32	0.88 1.89
Mk 1232	2	0.81 0.83	0.81 0.83
Bi 1207	2	0.68 0.87	0.68 0.87
Po 1160	2	0.96 1.08	0.96 1.08
Ga 1227	2	1.05 1.61	1.05 1.61
Cw 942	2	1.06 1.53	1.06 1.53
Bu 815	2	1.53 1.75	1.53 1.75
Other 3 cases		One of necessary figures wanting	

But this similarity, in fact identity of value, is not found in different specimens from any of the 18 persons who have furnished more than one specimen. The nearest two values for each are given in Table IV, together with the number of specimens from that individual analyzed by this method. In other words, here are four patients agreeing more closely than any one patient alone. Furthermore, each individual shows remarkably wide variations, as is also tabulated. Hence the justification for discussing primarily specimens rather than case-numbers.

TECHNIC.

The methods used throughout have been exhaustively described by their author and will not be repeated. There are, however, a number of details that may be worth recording, or emphasizing.

EXTRACTION.

The patient's blood may be kept from clotting by addition of the familiar crystal of potassium oxalate, making a strength of about 0.1%; or by saturated solution of sodium citrate, 1 drop to each 5 cc. or less of blood. With thorough shaking for 1 minute, the latter is sufficient to prevent coagulation and seems less apt than oxalate to result in hemolysis. Hemolysis when marked certainly makes an increased lipoid yield.[1] In very hot weather more speed and more anti-coagulant may be necessary. That the amount of citrate recommended above is sufficient is supported by a recent statement: "Sodium citrate mixed with blood in the proportion of 1:100 inhibited coagulation for 4 days when kept at a temperature of 10° C."

Salant, W., and Wise, L. E.: The Action of Sodium Citrate and its Decomposition in the Body, Jour. Biol. Chem., December, 1916, xxviii, 27-58, p. 57.

According to the above proportion one drop of the saturated solution, which contains 0.77 parts of sodium citrate, should inhibit coagulation in 77 drops of blood, *i.e.,* about 5 cc. Of this citrated blood 10 cc. are desirable, though 3 cc. are enough for determinations on the whole blood alone.

Culbreth, D. M. R.: Materia Medica and Pharmacology, Phila. and New York, 1917, p. 707.

It is desirable to redistil both the alcohol and ether used for extracting the original whole blood and plasma, for taking up the dry residue in Bloor's fat-method and for making the oleic acid standard.

Pipettes made in this country are by no means so reliable as those of the standard German makers and often need to be recalibrated. It is convenient to get or make a 7 or 8 cc. pipette to use for extracts that one expects to be a little strong for 10 cc. yet weak for 5 cc.

Beakers 9 cm. high are vastly preferable to those only 6 cm., which require closer watching of their sides to see that the moisture does not gradually creep up and then spatter. The bottoms of such 150 cc. beakers will then measure 4-5 cm. across; the exact diameter does not matter but the flatness does. It is important to go over a large lot and select the flatter ones. With these evaporation on an electric stove proceeds more smoothly.

Evaporation to dryness in all three methods requires less attention when done on the water bath rather than the electric stove.

After measuring out the 3 cc. portions into about 60 cc. of alcohol-ether, a routine practice has been made of letting stand 48 hours before raising to a boil. No attempt has been made to determine whether as complete extraction would be obtained if the boiling, cooling and making-up were done immediately—an obvious desideratum in applying the method to clinical work.

BLOOR'S FAT-METHOD ("TOTAL-FAT).

The standard has been made by weighing out Kahlbaum's "K" oleic acid, 210-240 mg., dissolving in redistilled ether and washing over with repeated portions, making 125 cc. ether in all, into a 500 cc. volumetric; making up with redistilled alcohol nearly to the mark; letting warm up again to room temperature and filling to the mark. Of this solution 5 cc. equals slightly more than 2 mg. oleic acid. Since one lot of this solution was noted to increase in value, presumably by evaporation, though the cork was neither accidentally left out nor noticeably loose, the making of large amounts at a time has not seemed advisable. The stopper should be of cork, forced in hard.

The evaporated residue with the added 5 cc. alcohol-ether, and the parallel 5 cc. of standard, are warmed just to a boil on the electric stove. Rapid boiling is facilitated by a little sand, previously cleaned with acid and alkali. On removal, the beakers are rotated gently half a dozen times while the excess ether is blown off. Four pairs at a time may be carried to this point. Distilled water, 50 cc. from a delivery pipette or even a simple calibrated graduate is run down the side of one unknown and its standard, then the HCl¼ (1:3). This may conveniently be kept in an unstoppered pint bottle with the 2 pipettes standing in it. Part of the five minutes after precipitation may be employed in transferring to the nephelometer tubes.

Bubbles have been frequent in the standards and nearly invariable in the unknowns. The high reflection from these increases the value, and their removal is, therefore, essential. I have used several methods:

1. Blowing off the excess ether longer and with more shaking of the beaker.
2. Heating the tubes in a bichromate-sulphuric acid cleansing solution weekly.
3. Boiling the distilled water, then cooling it to room temperature before use. Not much help.
4. Tapping the tubes against a block of wood with 2 holes, which is useful for carrying the tubes into a dark room next door. Though one tube becomes free of bubbles sooner, still it should be tapped approximately as often as the other, so that whatever disturbance there is of the colloids may be equal in both. Often necessary.
5. Inverting two or three times. Seldom necessary.

After putting the tubes in the nephelometer, one should examine them again to make sure that the side toward the light has not been smeared with the moisture which often gets on the fingers during the tapping just mentioned.

The N sodium ethylate may be conveniently made as follows: metallic sodium is taken from the tin; or from paraffin oil, in which case it is wiped with filter paper; a piece cut off and peeled, weighed to slightly more than 2.3 g., agitated with forceps in about 50 cc. ordinary ethyl alcohol till clean white, *i.e.,* about 10 seconds; transferred to 100 cc. freshly distilled absolute alcohol in a 200 cc. Erlenmeyer flask, covered with a beaker, put under the cold tap till dissolved, *i.e.,* 20-30 minutes; plugged with a rubber stopper pierced by a 2 cc. pipette and kept in the dark. The solution generally acquires a light brown color in 24-48 hours. Peelings should be left in the air until thoroughly oxidized to a crumbly white powder—NaOH and Na_2CO_3, and only then thrown in the slop jar.

That 2 cc. of this solution is ample to saponify is clear from the following calculation: suppose 5 cc. of the standard total-fat solution as made contains 2.3 mg. oleic acid. Now the amount of unknown extract used must contain less than $\frac{5}{3}$ as much, since even that requires a correction, and any stronger solution cannot be read in the nephelometer at all. This amount of extract then, whether it happens to be 10 cc., 1 cc., or even *x* cc. of a diluted extract (say 10 cc. of the lipemic extract made up to 100) cannot contain more than $\frac{5}{3} \times 2.3 = \frac{11.5}{3} =$ 3.8 mg. fatty acid. Now 1 cc. N Na-ethylate will saponify 1 cc. N oleic acid, $C_{17}H_{33}$ COOH, $C_{18}H_{34}0_2$, which contains 282 mg., *i.e.,* 74 times as much as the 3.8 mg. that can be determined nephelometrically.

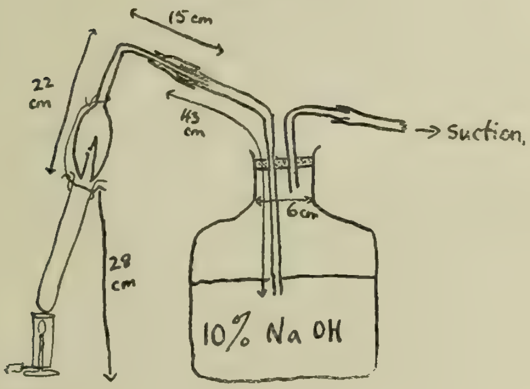
LECITHIN.

The phosphate "stock" was made according to the published directions,[2] but the "standard" was made by diluting 30 cc. up to 500 cc., after which 5 cc., instead of the original 3 cc. = 0.15 mg. H_3PO_4. The fourth lot of standard became mouldy two days after making, and simultaneously weaker—an event which was surprising in a weak phosphate solution (well-recognized medium for moulds), only because it had been absent in the first three, made from the same stock under apparently identical laboratory conditions. The next lot was, therefore, boiled and cooled before filling to the mark.

A convenient way to hang the tubes in the water bath is by a rubber band round the necks of every pair, across a glass rod; or if that does not lower them the desired centimeter into the water, then across a bent wire. When the bath is steaming actively, the necessary shaking until boiling can be comfortably done with a clean brass crucible tongs, each tip in one of the pair of tubes.

The Folin-Denis draught apparatus,[9] as modified somewhat by Dr. Bloor, seemed rather more compact than the original and was, therefore, copied. Four absorbers can be arranged in one cork. The tubes are hung by copper wire, about 25 cm. of 16 gauge being needed for each. The other measurements are given approximately in Diagram I.

Diagram I.



The first stage of digestion at a low boil is difficult when the tubes and beads are new and not yet etched, for then the boiling is apt to be either wanting or too active; under these circumstances 30 minutes of intermittent attention has been satisfactory. For the second stage the "gradual" raising of the flame is necessary only so far as to prevent the fumes from flooding the absorber and so overflowing into the air of the room. The nitric fumes will be off after 3-5 minutes; then one must watch more carefully since the usual ten minutes may easily make the tube go dry and crack.

It is often convenient to stop for the night at the end of digestion, or occasionally at the end of the first stage. This should make no difference theoretically, and practically does not. In the following duplicates the first stage of each first specimen was done, and 8 days later the rest of the determinations on those first specimens and the entire determinations on the second specimens.

I.	.500	.611	.336	.205	.381	.440
II.	.500	.611	.307	.212	.381	.428

The cane-sugar solution moulds easily and has, therefore, been boiled about every fortnight.

For the titration the alcoholic phenolphthalein solution must be 0.3%, not the common 1%, for that makes a faint cloud.

For acid H_2SO_4 1:1 was used. The NaOH need be only approximately 20%. In general, not more than 3 cc. should be necessary, provided the digestion is sufficiently prolonged.

The manufacture of the wonderfully delicate Kober-Egerer modification of the Pouget-Chouchak reagent has been the greatest difficulty of these analyses. I have followed the directions carefully in making sodium molybdate and from that the strychnine molybdate, several times with success, but also often without, so that I have had to depend repeatedly on Dr. Bloor's kindness in making it for me.

After precipitation of the phosphorus in the parallel unknown and standard 10 cc. aliquots, by running each into a 50 cc. volumetric containing the above reagent, the flasks should be made up to the mark promptly, to equalize the condition of the colloids.

The values in this paper are comparable with each other and also with the normals quoted, since all have been obtained by the same method,—Bloor's modification without sodium ethylate. But in case the reader should wish to compare them with diabetic values from other laboratories, it should be noted that different values, *e.g.*, for normal, are obtained by other methods, of which there are several in the literature.

Owing to the expense of acetic anhydride, Dr. Bloor now recommends 1 cc. instead of 2 cc. That this is equally satisfactory is shown by the following duplicates:

2 cc.	.495	.730
1 cc.	.500	.724

The electric bulb used has been a 100 w. Mazda nitrogen filled. After two of these had died of age within 6 months, without any rough usage whatever, the expense made it seem desirable to get along with an ordinary bulb. A 25 w. was difficult, however, and even a 40 w. so unsatisfactory that I procured another like the original. Probably the ordinary 100 w. Mazda, not gas-filled and therefore cheaper, would be satisfactory.

The Corning Daylite Glass Set B 30 at my disposal consisted of three plates. These absorbed not only the yellow rays, but so much of the illumination that only 1 plate could be used with the 25 w. bulb, and with the 40 w. not more than 2. With the ample illumination of the 100 w., curiously enough, 2 plates remained more satisfactory than the full set of 3. This point was confirmed by another observer, skilled in reading the colorimeter, as also the observation that the use of no plate gave the same reading as the blue-green alone. With the weak bulbs, when only 1 plate could be used, the most satisfactory to my eye was the blue-green, 78.5%; then the pale-purple, 59%; and least the violet, 115%.

The use of the colorimeter or nephelometer has many pitfalls. These have been commented on by various observers, no one of whom, however, seems to me to have altogether covered one of the most troublesome points.

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[9] Folin, O., and Denis, W.: Jour. Biol. Chem., 1911-12, xi, 503.

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Lyman, H.: Jour. Biol. Chem., March, 1917, xxix, p. 170, 169-178.
Kober, P. A.: Jour Biol. Chem., March, 1917, xxix, pp. 155-168.

The usual preliminary to reading an unknown is to read the standard as an unknown against itself, and to take the value as the potential height of the standard. This has been also stated in other ways. The procedure is about as follows: The standard on the right is set at say 20, then read on the left (1-5 times according to different authorities), and found to be say 20.2. It is left at that point and the standard on the right is replaced by the unknown which is then read. In the ensuing calculation the standard is 20, not 20.2. Even after a month's practice reading turbidities in some unpublished acetone determinations, I found that my readings were not consistently 20.2, but varied sometimes by more than 2%±, even when the instrument was not moved at all from its position in the light box. This was of course unsatisfactory. When, however, the preliminary was made to consist in setting the standard at 20 on both sides *and looking through the telescope carefully for a moment, the eye seemed to become trained;* so that after an interval of 10 seconds the standard *could* each time be read against itself within a variation of less than 1%± from the usual level of say 20.2. This balancing of the instrument was found necessary after each 4 unknowns.

For example, using 4 samples of the same chloroform extract and adding acetic anhydride and H_2SO_4 to each like an unknown, the values got were: 16.6, 16.8, 16.7, 16.8, none of which varies from the average 16.7 by as much as 1%, which is much less than the error of the method as a whole. Other observers with the nephelometer or colorimeter recommend variously repeating the balancing after each 1, 2 or 4 unknowns.

Unknown readings below 9 or above 20 have always been rejected and done over again.

No attempt has been made to use for a standard the aqueous solution of Naphthol Green B suggested by Bernard and found satisfactory by Myers and Gorham.

Myers, V. C., and Gorham, F. D.: The Chemical Composition of the Blood in Health and Disease, The Post Graduate, 1914, xxix, 938.

(To be continued.)

Medical Progress.

PROGRESS IN DERMATOLOGY.

BY JOHN T. BOWEN, M.D., BOSTON.

SCALP DISEASES AND HATS.

MANHEIMER[1], the Secretary of the American Association for Promoting Hygiene and Public Baths, has written an article on this subject which embraces observations on the retail hat trade. He states that there are few positive data as to the prevalence of skin infection among the general population inasmuch as most of these cases are not reportable, but considers that a further administrative control is quite warranted. In the report of the Director of Child Hygiene of the Department of Health of New York City for 1910, it was found that 59 per cent. of the children examined had pediculosis capitis. In Philadelphia 33 per cent. were observed. The time lost from treatment for pediculosis was therefore vastly greater than that from all other affections put together. The writer emphasizes the enormous prevalence of pediculosis among the adult population generally, and states that it is one of the most frequent conditions met with in physical examinations of recruits for the army and navy. The spread of typhus fever by means of head lice is well known, and this circumstance should be given serious consideration in view of our present military preparations. With regard to syphilis, the comparative frequency of extra-genital initial lesions is referred to, Montgomery being cited as estimating that at least 10 per cent. of all the syphilis in this country is extra-genitally acquired. Many syphilitics offer lesions of the scalp, and in these cases there is great danger from the trying on of hats. Acne, impetigo contagiosa, and ringworm are diseases common in school children, which may be transmitted from one to another. Leprosy and erysipelas are other infectious maladies discussed. With regard to the *transmission of infection through hats,* a study of infections traceable to this source was undertaken. During the busy season a great many hat shops were inspected and many retail salesmen were questioned. By actual count, it was found that over 2% of the men trying on hats had noticeable eruptions on the face and forehead. Almost all of the salesmen admitted that no one would be forbidden to try on a hat, whatever might be the obvious condition of his forehead and scalp. Although the sweat bands of hats frequently become soiled, they are very rarely changed, unless in very bad condition. Almost all purchasers try on at least four hats before selecting one, hence the opportunity for a person with a discharge from his forehead infecting a number of hats. In the better class of shops a head conformator is used in order to shape the hat properly on a block, and this being used on all customers may easily become contaminated. In some shops this has been provided for by the employment of small paper skull caps for the protection of the head. The universal use of this protective cap is advocated, not only in the case of conformators but while fitting hats in general, as the paper being cheap, it can be discarded after each use.

TREATMENT.

Pure Coal Tar.—Semon[2] relates his successes with coal tar at a base hospital in France, using a mixture containing equal parts of pix carbonis B. P., acetone and flexible collodion. He applied this paint in various skin affections, and the results were satisfactory with very few exceptions. It is to be remembered, now that it is so difficult to obtain synthetic and other drugs, that tar is cheap, easily procured, and requires as apparatus only an ordinary house-painter's brush. It is a cleanly application after it has dried, and all traces may be removed from the clothing and from the skin in a very few minutes by means of ether. It is remarkable how well the most delicate skins will stand pure tar. It was found to be well tolerated on the skin of the knee flexures, the elbows and the wrists, as well as on the scrotum. It was used with success in aural eczema. He considers it the best antipruritic medicament we possess, sometimes curing local itching when x-rays fail. It is remarkable how rapidly the pruritus is often cured—in fact, if improvement does not occur at once, the case may be regarded as unsuitable and not likely to be benefited by further application. The cases of skin diseases occurring in military encampments are naturally not very varied, and scabies formed the greater number of the cases observed. These cases were usually complicated with dermatitis, furunculosis, impetigo, eczema, etc. In cases where the dermatitis had ended in a chronic eczematous condition, the tar was found to be invaluable, but was useless in impetiginous states. Nor is it applicable where there is a complication with furunculosis. It is very valuable in lichenoid conditions, and when there is a dermatitis of a vesicular or papulo-vesicular nature. Seborrhoea was a frequent occurrence, possibly from the continuous use of steel helmets, and the impervious mackintosh linings of the cloth service caps. In some of the less acute forms of this affection, the tar paint was found to be very effective. In psoriasis, which is so closely related to seborrhoea, isolated plaques covered with thick scales were removed after four days painting, without any preliminary scrubbing or removal of the scales. It was found very valuable in lichenification.

Sulphur Fumigations for Scales.—Bruce[3] recommends in camps the treatment of scabies by sulphur fumigation. The patient is given a hot bath and allowed to soak for at least five minutes in the water, well lathered with soap, either soft soap or yellow bar, and the skin scrubbed to open the burrows. He is then put in a warm cabinet used out of doors, his head protruding through an aperture in the roof, and subjected to the fumes of a lighted sulphur candle placed inside the cabinet. An orderly must remain in constant attendance with instructions to remove the patient at once if he should show signs of faintness or difficulty in breathing. He is kept in the cabinet from forty to fifty minutes, when the lid is quickly removed and the patient returns to the bathroom, where he puts on clean, warm clothing. It is of course necessary to send with the patient all his kit, including blankets and pillow, which may be treated by a steam disinfector, or in the cabinet when only one case is being treated. Boots and other leather articles may be treated by formalin spray or in the cabinet. It is important to see that the cabinet is warm and that it contains water vapor. The best results are obtained in recent cases with little induration, and one application will invariably cure these cases; when there is much induration, a second application is given at the end of forty-eight hours. There is immediate relief from itching and irritation, and sleep is not interfered with. It is very rarely that there is any resulting dermatitis; but if so, it is easily reduced. There is sometimes a slight general branny desquamation about forty-eight hours after the treatment. Bruce has treated about 200 cases, and has had two per cent. of returns, which he feels certain was due to the fact that some article of clothing had escaped disinfection. The treatment is rapid, certain and cheap, and one candle treats ten cases. If the clothing can be rapidly disinfected, cases can be returned cured to their units on the day of admission. The treatment if carefully carried out is in no way disagreeable to the patients.

The Electric Cautery.—Hazen[4] extols the value of the electric cautery in cutaneous urgery, especially in the treatment of soft corns, granuloma pyogenicum, lupus vulgaris, keratosis, papillomas, pigmented moles, xanthelasma, cancer, leukoplakia, and for the removal of tissue for diagnostic purposes, where malignancy is suspected. With regard to other modes of destruction, he considers that the caustics have certain marked disadvantages, in that the superficially acting ones are applicable only to surface cases, whereas in the more deeply acting ones, such as arsenic, the pain is usually very intense, and their use does not permit histological examination of the tissue removed. Carbonic dioxide snow is quick and usually not painful, but does not usually act deeply enough, and is worthless in cancer or tuberculosis. It is valuable chiefly in the case of certain angiomatas, and of lupus erythematosus. Hazen does not think, from his personal observation, that fulguration or diathermy have any value superior to that of the caustic. The electric needle is well adapted to the removal of small superficial non-malignant conditions, as it is painless and leaves excellent cosmetic results. He considers that the field of the roentgen ray and of radium is small. For many affections they are ineffective unless their action is carried to the point of producing a burn, which is recognized to be a dangerous procedure. The curette does not touch the outlying morbid cells that are usually to be found in otherwise normal tissue. The knife is undoubtedly the cleanest way of treating many lesions, particularly the non-malignant neoplasms, and affords the best tissue for pathological examination. The actual cautery is better adapted to heavy work, the electric cautery to light work, as it is mechanically easier to operate and to keep at a steady heat, either dull red or bright red. It is exceptionally cleanly, and scrubbing and sterilization of the hands, of the instrument, and of the patient may safely be omitted. The operation may be done quickly and no dressings required, and the crust is the best dressing. It is the ideal instrument in cases where it is impossible to leave much margin. The writer states that all surgeons are agreed that in malignancy there are fewer recurrences after the cautery than after the knife. The cosmetic results are excellent, and tissue can be obtained for histological examination. In lupus vulgaris deep cauterization is necessary, as otherwise there is sure to be a recurrence. Soft corns are excised with a fairly heavy blade, and the lymph vessels that feed them at the base thoroughly cauterized. In the case of keratosis and papillomas the edge of the blade is inserted at the border of the lesion and then shoved along beneath it. Lesions on the eyelids and pigmented moles are very successfully treated by this method. Malignant growths are excised just as with the knife and local anaesthesia is employed in all cases.

The Coolidge Tube in Non-Malignant Skin Affections.—Howard Fox[5] states that only since he began to employ the Coolidge tube has his roentgen ray work in the treatment of skin diseases been really satisfactory. He strongly advocates the use of measured dosage in roentgen ray treatment, the Coolidge tube being used, as it greatly assists in attaining this object. On account of the remarkable constancy of this tube, it has been possible to treat cases of acne and eczema in a routine manner without the slightest danger of ill effect. Fox's best results were obtained in cases of eczema, of which all types were treated except the very acute vesicular forms. He treated 60 cases in all, varying from papular and vesicular eruptions of a few weeks' duration to chronic thickened patches that had lasted thirty years. Of these, 39 responded well to the treatment, especially nine cases in which the palms and soles were affected, and 2 cases in children of 4 and 2½ years respectively. In 16 cases the lesions were either entirely cleared up or greatly improved, but later relapsed somewhat. In ten cases the results were indefinite and 3 cases failed utterly to respond. His results in psoriasis were, in general, disappointing, for although the lesions were quite easily cleared up, they promptly returned. It was found particularly useful in lesions of the hands and face when chrysarobin is objectionable, and in isolated patches. Of 19 cases treated, the results in 8 were distinctly favorable. In one, a patch of psoriasis on the abdomen, which had resisted chrysarobin, disappeared after five treatments. Four out of six cases of seborrhoeic eczema gave excellent results. In acne the treatment proved very satisfactory, 12 cases showing better results than could have been obtained, in the writer's opinion, by the usual method. An average of 8 exposures was given, and improvement usually showed itself shortly after the fifth treatment. All types and grades were treated, and the most striking improvement was shown in the severer cases. He considers the roentgen ray as at present the most efficient agent in the treatment of acne. Rosacea did not prove responsive, whereas it was successful in a few cases of lichen planus. As was to be expected from previous experiences, sycosis and localized pruritus were successfully treated.

Toxicity of Salvarsan.—Schamberg[6] of Philadelphia and his associates, working in the Dermatological Research Laboratories of the Philadelphia Polyclinic and College for Graduates in Medicine, undertook studies with the view of shedding some additional light on the complex and important subject of the toxicity of salvarsan. These laboratory experiments, carried on chiefly by means of rabbits and rats, were of a high degree of interest, and gave cause for the following conclusions:

1. Salvarsan may be used in concentrated solutions up to 0.6 gms in 10cc. *in animals*, without any evident increase of toxicity.
2. The failure to neutralize the solutions of salvarsan with alkali leads to an increase in toxicity of 50-60% in solutions of 1-2 to 1% concentration.
3. The addition of a moderate excess of alkali beyond the amount required for neutralization does not increase the toxicity, as determinable by the duration of life of the experimental animal. It is possible, however, that it may have other untoward effects.
4. The use of sterile fresh distilled water appears to possess advantages over sterile stale distilled or non-distilled water, as regards toxicity, although the difference in our experiments was not pronounced.
5. Salvarsan in alkaline solution tends to undergo oxidation on standing, with consequent increased toxicity; but this substance and its congeners vary considerably in the rapidity of oxidation, and in the degree of associated tox-

icity. The drug should be used reasonably promptly after preparation. If two or three hours' delay is unavoidable, the solution should be kept in a cylinder, full to the stopper, so that no air is present.

6. Several different types of reactive symptoms may occur after the use of salvarsan: (a) immediate; (b) early, and (c) delayed. The immediate symptoms are due to a paresis of the blood vessels; the early symptoms coming in a few hours after the injections are febrile and gastronomical; and the delayed symptoms may be referable to the brain, or the liver and gastro-intestinal tract.

7. There is no one cause of reaction. The etiological factors in the production of reactive phenomena may be related to (a) the patient, (b) the technic, and (c) the medicament. We believe that the most important factor in the causation of reactions is referable to the drug. We believe that the immediate vasoparetic reactive symptoms are due to traces of an unidentified impurity in the drug, which we have for convenience termed substance X. We are confident that these symptoms are not due to "arsenoxide."

8. Salvarsan and its congeners are not compounds of absolute chemical purity. We cannot, therefore, expect absolute constancy in biological effects.

9. Salvarsan and its congeners may vary, within certain limits, in therapeutic effect, and to a greater degree in toxicity. The ampoules obtainable in the open market exhibit striking variations in toxicity.

10. Even the poorest compounds, however, are tolerated by animals in much higher amounts than the maximum dose administered to man, so that there is nearly always a latitude of safety.

11. We believe that the commercial products should be tested intravenously as well as subcutaneously, and that they should be tolerated by rabbits in the dose of 60 mg. per kilo of body weight.

12. Salvarsan is a safer substance than mercury and can be tolerated intravenously by white rats in 50 times the dose of the latter, weight for weight.

Radium in Lupus.—Paul Haslund, first assistant in Finsen's Light Institute in Copenhagen, was to have delivered a lecture on this subject before the Scandinavian Dermatological Society in June, 1916. This lecture was never given, owing to the author's death just before the meeting, but has been printed, as written, in the *British Journal of Dermatology* for October-December, 1916. He refers to the enthusiasm for treatment by radium that had passed over large parts of Europe four years previously, which was shown to be unfounded more than ten years after the introduction of radio-active substances into therapeutics. It was, however, the cause of the Finsen Institute purchasing a sufficient quantity of radium to enable them to make independent therapeutic observations. Although there has never been quite so high a degree of enthusiasm for radium in the treatment of lupus as in the case of malignant tumors, it has, nevertheless, been pronounced in some quarters. Danlos was the first to introduce this treatment in 1900, and the reports since then as to its value have been quite conflicting, and also as to the most effective way of administering it. Since it has been claimed that each apparatus has its peculiarities, that the power of resistance of the patient varies much, and that morbid tissues can stand much higher doses than healthy ones, Haslund considered that the whole system of treatment might be fairly termed at present a purely empirical one. In all, 31 cases of lupus vulgaris of the face were treated by radium as well as some with lupus of the mucous membranes. As to his results, he states that it is beyond doubt possible to obtain healing of the lupus foci, and consequently a permanent cure, in certain cases of limited extension, although even in this case one should be prepared for local relapses. In the majority of cases, however, the results were less favorable, for even if a definite improvement was shown in some cases, it was only after a long time, or was followed by retrogression or an absolute stand-still, so that it was thought necessary to substitute some other form of treatment. He considers that the cosmetic results are not so good after radium treatment as after the light and even x-ray treatment, owing to atrophy and telangiectasis that may ensue; and on the whole that the radium treatment is inferior to our other means of curing the disease.

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[3] British Journal of Derm. and Syphilis. April-June, 1917.
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Book Review.

Clinical Laboratory Technic for Nurses. By Anna L. Gibson, R.N. Boston: Whitcomb and Barrows, 1916.

This manual by the assistant superintendent of the Huntington Hospital is not only most creditable to the author, but affords a distinct addition to the nurse's education, covering, as it does, a hitherto unoccupied field. It is well known that as technicians women frequently excel men in the laboratory work which is here described; and the mastery of this department is a valuable asset to a trained nurse who desires to fit herself as the assistant of the practising physician or surgeon.

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ORGANIC LESIONS IN SHELL SHOCK.

RECENT observations on the various fronts tend to show that shell shock is the expression of a cell-exhaustion of the central nervous system. It is generally accepted by neurologists that this exhaustion is accompanied by pathological lesions of the cytoplasm. It is, perhaps, doubtful whether this change is invariable, and the laws governing it are still very imperfectly known, but, as a broad fact, it is certainly true. Such lesions may be divided into two main groups. First, those which are visible after proper staining of some particular cells or substance of the brain. These have been observed recently, and they seem to lie at the root of fatal cases of shell shock. Secondly, those which connote a diminished potentiality for the development of nerve force of such a nature as to impair the value of the cell. These are types of degeneracy which appear in spite of a satisfactory military training and environment. It is this latter class that alienists like Sir George Savage and Sir Robert Jones have described in the *Journal of Mental Science.* These authors seem to understand by the disposition to shell shock a marked falling away, mentally, morally, and physically, from the average condition of the soldier or race. Thus, among British soldiers, the habitual criminal and the morally perverse, the mentally unstable and insane, the physically weak and ill-developed are often spoken of as predisposed to shell shock. But there are also cases in which it occurs, in spite of hygienic surroundings, the best heredity, and the most careful education. It follows that shock or fear or the dread of the "unknown," of sufficient severity to overwhelm the will, may cause in healthy men the whole syndrome of the affection—the unconsciousness, aphasia, abasia, and pseudo-paraplegia. It is shown by Nissl and by Nonne that the power to resist the highest degree of fear, as in drumfire, explosion of mine craters, etc., necessitates the presence of the maximum nervous potentiality plus an optimum constitution. This is the meaning of Dr. Mott's phrase that many cases of shell shock are the neuro-potentially unfit.

There are three chief views as to the causation, which have been fully discussed by Wollenberg (*Archiv für Psychiatrie,* 1916, p. 335), and more recently by two Italian neurologists. Lattes and Goria (*Archivio di Antropologia Criminale,* April, 1917). The first is, that shell shock is not the expression of a pathological cell change, but the sign of a defect which exists in certain strains or stocks, and which most writers describe as psychoneurosis, hysteria, suggestibility, and degeneracy. On this view it is presumed that the innate nerve potentiality has been impaired by congenital or acquired hysteria and neurasthenia; it includes, besides, the types of degeneracy as seen in idiots, epileptics, and paranoiacs. In modern armies these groups are found, which obviously shows the importance of a minute family and individual history in the examination of soldiers. The second view is that the syndrome of shell shock is not the result of defects or atavistic causes, but arises of itself; in other words, it is psychogenic. Most writers agree that these cases—the functional, emotional, the hysterical in the usual sense—are the most numerous. As Wollenberg says: "In the bulk of the cases of shell shock (Granatkontusion) the emotional factor far outweighs the commotional." Dr. Mott and other British authorities take this view, but they have considerably narrowed the definition of hysteria.

The third classification is that the causes of shell shock—whether they have existed *ab initio* in the soldier's nervous system or whether they are psychogenic in origin—are physical processes, organic lesions, produced by the effects of long exposure to the gases, and other results of the bursting of powerful shells. In this place reference may be made to a recent work by Homburger (*Die körperlichen Erscheinungen der Kriegshysterie*). This author looks upon the question in a twofold way: either the idea of pure hysteria must be abandoned, or this form of hysteria must be sharply differentiated from hysteria with organic lesions. Most neurologists at the front find it exceedingly difficult to believe in traumatic hysteria (Oppenheim's) or molecular shock (Charcot's). Actual observers found that of 74 men examined after an artillery attack, 67 showed unmistakable signs of localized organic lesions of the central nervous system.

These lesions have now been studied post mortem by Dr. Mott and Captain Hurst. They, as well as French, Italian and Russian neurologists, have observed: (*a*) early generalized chromatolytic changes in the cells of the central nervous system, (*b*) disappearance of the basophile substances (*c*) extravasation of blood into the substance of the brain, (*d*) punctate hemorrhages with congestion of the meninges, (*e*) minute hemorrhages and changes due to the effects of compression and decompression, that is to say, as in caisson disease, with cerebrospinal fluid under high pressure, albumin, blood, and excess of lymphocytes. It has been noticed by several observers that the clinical signs are those of organic changes; and Homburger, Mörcher, and Nissl believe that the war has altered our conceptions of hysteria though it has produced no new type. Nissl, in particular, appears to question the existence of the "hysterical personality." Shell shock is that condition of nervousness which results from the exhaustion of the inherent vitality of the cells. They are unable to function because they have come to the end of their physiological banking account. In fact, to Nissl most cases are due to a completely human and normal weakness, and the organic lesions, it might be added, are equally likely to be due to the action of inorganic poisons, as gas, and physical agents, concussion and commotion.

PUBLIC HEALTH VALUE OF UNIVERSAL PHYSICAL EXAMINATIONS.

From time to time it has been urged that all individuals submit periodically to physical examination in order that disease may be detected and that in this way the standard of health of the community and of the people be raised. In justification of this most radical procedure, the claim that about 80% of the people are suffering from one form of disease or another is advanced. The large number of rejections for physical causes in the draft is also pointed to as an argument in favor of this examination. For this large percentage of sickness there is, however, no statistical or other foundation, even if all minor ailments to which man may temporarily be subject, be included. From the draft standpoint it must be remembered that most of the rejections were for physical inadaptability to this form of vocation,—the military vocation. This rejection in no wise reflects upon the general health or fitness for other useful or necessary vocations. And, indeed, the modern tendency is to reject no one except for tangible disease, but to fit everyone for even a military vocation which he is able to do. The time is past when the bogey of disease must be used upon intelligent individuals in order to force them to attend to ordinary health and sanitary precautions. The general health of the public does not depend so much upon individual endeavor to perfect one's own body as it does upon the health activity of a particular community in closing the large and patent avenues of danger to health, such as in respect to food, active contagion, dangerous industries, general sanitation, protection of the young, etc. When a community gives these matters the maximum attention of which it is capable there is little need of this sort of individual anticipatory attention to possible disease. That health is purchasable by a community is more than ever true.

Moreover, it is very much of a question whether it is advisable to increase the tendency in some people to hypochondria and other forms of physical introspection with these examinations, for the advantage that might be gained through the detection of disease not otherwise suspected. There is already too much attention paid to the purely physical, and too little to the mental, ethical and spiritual phases of life. A decent regard for the health, cleanliness and general well-being of the body is absolutely necessary, but to deify it or to make it the main consideration of life, with the fear for its safety that it engenders, is unworthy of the times. Besides, it is illogical to examine the body periodically without giving parallel attention to the mind, since they are very often dependent upon each other; yet to advocate the periodic examination of the mind of all people would appear absurd to those who advocate the examination of body. It is hoped that the periodic examinations would detect most cases of tuberculosis and thus prevent its spread. The few active cases not under surveillance would not be worth the trouble of detecting them.

Furthermore, these examinations would soon be looked upon as guarantees of good health made by the medical examiner, and contrary eventualities would react unfavorably upon the ability and integrity of the whole profession. It would defeat its own purpose because it would vitiate the value to the laity of future examinations. There is no doubt that in civilized communities most of the active cases of illness are being looked after. The occult cases or the cases that are rather potential than active, are very hard to detect, even when the individual presents himself for examination for cause. Diagnosis is not a question of examination and then diagnosis. For the good of all, the laity must be disabused of this false notion. Examinations on the scale proposed would tend the more to encourage this notion. The idea of periodic physical examinations of certain individuals or classes is, however, a good one. Frequent examinations of the inmates of institutions, schools, factories and the like by their own medical officers is valuable and feasible because of the community of interest in all the individuals concerned. From the same standpoint, the examination by life insurance companies of their policy holders is good. It is to their material interest that their insured maintain life and health. The value of these latter examinations lies particularly in the fact that they are made by medical officers concerned only with a particular class, but does not apply to the physician at large, who must be occupied with the tangible ills of a community. At the present time medical men will be scarcer and scarcer as they are needed for war work. Those remaining will be quite busy with more pressing needs, and will have little time to officiate in the medical examination arenas. It is much better to concentrate with the proper health authorities the supervision of the community's health and allow them to urge proper living as a means of conserving the health of the individual. Much as the propagandum for this sort of examination maintains to the contrary, the health and the well-being of the community and the individual are good. Statements to the contrary are libels, no matter what the source or the motive.

* * *

EVERY DOCTOR IN THE MEDICAL RESERVE CORPS.

What an ideal situation it would be if every doctor in the United States who is mentally, physically and morally fit, were in this Corps. The time is coming, and in the immediate future, when the Medical Reserve Corps of the army must be immensely augmented; and to enable the Surgeon-General to have at his command for immediate assignment, as conditions demand, a sufficient number of trained medical officers, let us take the above thought seriously. We all know, from past history, the conserving value of an efficient medical corps, and this means number as well as training. A statement made by one high in authority in the Surgeon-General's office, "that our fighting forces would be disseminated by sickness and casualties in six months were it not for an efficient Army Medical Corps," clearly emphasizes the importance of every doctor in the United States, meeting the requirements above referred to, accepting a commission in the Medical Reserve Corps of the United States Army.

The struggle in which we are now engaged, and for which we are preparing to take such a prominent part, depends for its success as much upon the medical profession as it does upon our combatant forces, and while we do not know that any such intention as herein suggested is in the mind of the Surgeon-General, it would at least give him the necessary corps of medical officers upon which to draw, and thus serve the best interests of our country, and the best interests of the medical officer serving.

* * *

Deaths among Troops in France.—On December 20, General Pershing reported four deaths among privates—one from measles, one from meningitis, and two from pneumonia.

MEDICAL NOTES.

Photochemistry.—A prize of one hundred dollars is offered for the best research work upon photochemistry in its broadest aspect, done at the Harvard Medical School during the Academic year 1917-18. This prize is open to any research worker at the school. Papers submitted in competition must be in the hands of the committee not later than September 1, 1918, and should be forwarded to the chairman, Dr. Otto Folin, Harvard Medical School, Boston. The committee on the award consists of the head, or acting heads, of the departments of bio-chemistry, physiology and bacteriology of the Harvard Medical School. Papers must be typewritten, and should consist mainly of the results of unpublished original work.

Hospital Bequest.—By the will of the late Mrs. Martha A. Cummings of Brookline, the Rhode Island Hospital at Providence is to receive a bequest of $8000; one-half of this sum is to establish a free bed, to be known as the Silas William Cummings bed, in memory of Mrs. Cummings' husband, and the other half to bear her own name.

Weekly Report of Health in Training Camps.—The report for the week ended December 14 showed that the health in camps of the National Guard divisions had improved, and that in the National Army camps had not improved.

Deaths for the week in the Guard division totalled 165, as against 190 the week previous, and those in the National Army 97, against 74 the week before. Of the Guardsmen dying, 143 succumbed to pneumonia and 12 to meningitis. In the National Army there were 69 deaths from pneumonia and 18 from meningitis.

There was a decrease of 128 cases of pneumonia in the Guard camps, the total for the week being 294, as against 423 the week previous. Cases of measles decreased from 2633 the previous week to 1058, and meningitis from 42 to 30.

In the National Army there was an increase of 124 cases of pneumonia, with 294 this week against 170 the week before. There were 2251 cases of measles this week, against 1369 the previous week, while meningitis cases were 61, against 35 last week.

Military Hospital in Boston.—Under the direction of Lieut.-Col. William A. Brooks of the Massachusetts State Guard an emergency hospital of about 450 beds will be made to occupy the artillery drill shed of the Commonwealth Armory. The hospital will consist of twenty-two wards of twenty beds each, with a sterilizing plant, operating room and dressing stations. It will be under the supervision of the medical division of the Massachusetts State Guard, which will furnish the entire medical and surgical personnel of the staff, and will be available for use in the event of a disaster such as befell Halifax.

Promotion of Surgeons to Rear Admirals.—The President has selected Medical Directors George H. Barber and Edward R. Stitt to be promoted to the rank of rear admirals. Dr. Barber is a native of Massachusetts, and has been for several years director of the Naval Hospital at Las Animas, Col. Dr. Stitt is president of the Naval School, Washington, and an authority on tropical medicine.

WAR NOTES.

Sanitary Conditions at War Camps.—Surgeon-General Gorgas, in making his report of conditions at the army cantonments where epidemics are rife, stated that insufficient clothing, overcrowding and bad sanitary conditions are largely responsible for disease prevalence. With the exception of Camp Funston at Kansas none of the camp base hospitals have been completed, the work of the medical officers being thereby much handicapped.

"Gen. Gorgas recommends observation camps, the relieving of overcrowded conditions, the oiling of nearby roads to keep down the dust, and the erection and heating of ambulance sheds to obviate the present difficulties found in getting the motor ambulances started during the cold weather, because of the freezing of the water in the radiators.

At Camp Bowie, where the 36th Guard division is training, General Gorgas reported 41 deaths during the past month from pneumonia out of 409 cases admitted to the hospital. About 2900 cases of measles have developed in the same length of time.

At Camp Funston, in the 89th National Army division, there have been 43 deaths from pneumonia with 189 cases, 22 from meningitis with 70 cases.

'This indicates the most serious condition as far as infection from meningitis and pneumonia is concerned,' Gen. Gorgas says. 'As emphasizing the situation, I call attention to the fact that they had 84 deaths from all causes when the normal death rate of such a command should be about 12.'

The General reports that among the 36,000 drafted men injected in the cantonment in October were many meningitis carriers, this part of the country being known, he says, to all health officers as having been for several years the principal epidemic center in the civil population for meningitis.

Sanitary conditions at Camp Sevier, in the 13th Guard division, are described by General Gorgas as serious. Sixty men have died of pneumonia in the past month, and the camp has been exposed to a general epidemic of measles, about 2000 cases having occurred. During the month there have been 175 cases of pneumonia and 15 cases of meningitis.

The basic cause of unsanitary conditions, the report continues, is overcrowding as the result of the shortage of tentage. From 11 to 12 men had to be put into each tent with about 20 square feet to each man. General Gorgas recommends that no additional men be sent to this camp until the division commander says he is able to care for them in the proper manner.

During the past month at Camp Doniphan, where the 35th Guard division is training, there have been 74 admissions from pneumonia with 11 deaths; 316 cases of measles and 1 death; 104 of diphtheria with 1 death; and 6 of meningitis, with 4 deaths. Overcrowding is described by the report as the basic cause.

War Relief Funds.—On Dec. 30, the totals of the principal New England war relief funds reached the following amounts:

French Wounded Fund	$305,701.62
Armenian-Syrian Fund	273,741.33
French Orphanage Fund	136,246.34
Serbian Fund	125,725.42
Italian Fund	108,216.21
Polish Fund	94,682.73
LaFayette Fund	34,097.28
War Dogs' Fund	2,393.53

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending Dec. 22, 1917, the number of deaths reported was 235, against 239 last year, with a rate of 15.86, against 16.39 last year. There were 34 deaths under one year of age, against 35 last year.

The number of cases of principal reportable diseases were: diphtheria, 119; scarlet fever, 47; measles, 85; whooping cough, 42; typhoid fever, 3; tuberculosis, 48.

Included in the above were the following cases of non-residents: diphtheria, 10; scarlet fever, 7; measles, 2.

Total deaths from these diseases were: diphtheria, 5; measles, 2; whooping cough, 2; typhoid fever, 1; tuberculosis, 22.

Included in the above were the following non-residents: diphtheria, 1; measles, 1; tuberculosis, 1.

Boston City Hospital Contagious Wards.—At the opening of the new City Hospital West Department in West Roxbury, recently, Mr. Shuman, president of the Board of Trustees, gave the following interesting account of the development of the City Hospital in its care of contagious diseases.

"On Aug. 31, 1895, the South Department for communicable diseases was opened, marking a new era in hospital administration, as this was the first hospital for such diseases in this country. Before that time, scarlet fever, diphtheria and measles were admitted into general hospitals and more or less isolated in rooms and wards therein. The trustees of the hospital at that time recognized this as a very great menace to the hospital and to the community, although they had set aside two wards—old A and E—for that purpose.

During the 22 years that the South Department has been open very valuable work has been carried on here. The value of antitoxin was early recognized by Dr. McCollom, and he was the first man to use mammoth doses of antitoxin, now universally used throughout the world. The result of this treatment is shown by the fact that before the use of antitoxin the mortality from diphtheria was 48 per cent., and last year's record shows that it has been reduced to 7 per cent. Equally valuable has been Dr. Mallory's research work in scarlet fever, during which he discovered the bacillus.

Several years ago, during Mayor Fitzgerald's administration, the trustees realized that the South Department had outgrown itself, and requested an appropriation from the Mayor and City Council to build new wards on the corner of Harrison avenue and Northampton street An appropriation of $298,000 was granted for this purpose. Later, when the Parental School was abolished, the City Government transferred the buildings and grounds thereof to the hospital department in connection with the South Department, and the above-named appropriation, to the amount of $200,000, was transferred to this new branch of the hospital, which is known as the West Department. The result is before you in the remodeling and connecting corridors of the different buildings, made suitable for hospital purposes.

For the past few years it has been necessary to request from the Health Department the use of the Southampton wards for the overflow of scarlet fever and diphtheria from the South Department. A short time ago the trustees, knowing that they were rapidly nearing the time when they would have to take care of the overflow, and because of the fact that several cases of smallpox were housed at the Southampton wards, realized that they must immediately open the diphtheria and whooping cough wards of the West Department. The rest of the buildings, it is hoped, will be ready for occupancy within the next two months. They would have been completed before now but for the delay incident to such alterations and building.

The West Department again marks a new era in hospital administration, for the ward that has been set aside solely for whooping cough is the first distinctly whooping cough ward opened in the country.

It is a source of pride and gratification that the city of Boston takes better care of its afflicted citizens than any other city in the United States. Its hospital doors are wide open at all times for all who are entitled to treatment therein. The City Government has always been generous and liberal toward its City Hospital and this has enabled the trustees to keep abreast with the times and put the institution on the plane of highest efficiency for the welfare of the people."

Hospital Bequest.—By the will of the late Mrs. Dorcas C. True of Malden, Mass., the Malden Hospital receives a gift of $1000.

City Hospital Trustee.—Dr. John P. Toomey of Roxbury has been appointed trustee of the Boston City Hospital to fill the vacancy left by the recent death of Conrad J. Rueter. Dr. Toomey is a graduate of Harvard Medical School.

Obituary.

PROFESSOR THEODOR KOCHER.

The death of Professor Theodor Kocher in Berne, Switzerland, marked the end of a long and famous career of one of the pioneers of surgery. Professor Kocher was born in Berne on August 25, 1841, and after his student days there, spent some time in Berlin, London, Paris and Vienna, where he was a pupil of Billroth's. He graduated at Berne in 1865, was called to the chair of clinical surgery in the University of Berne in 1872, and for forty-five years was head of the university surgical clinic there. In a recent number of the *British Medical Journal,* Sir Berkeley Moynihan gives the following appreciation of Kocher's work and influence:

"With the death of Kocher the world loses its greatest surgeon. He lived a long life of unceasing industry, he covered a wider range of subjects than any living surgeon, and all his work was marked by clear insight, profound thought, accurate and well-ordered statement, and wise judgment.

From his earliest days he was a sound anatomist. The first of his contributions to surgery to attract attention was that in which he worked out the method now known by his name for the reduction of a dislocated shoulder. On one memorable occasion, when he sat among the audience in Billroth's theatre, a case of old unreduced subcoracoid dislocation of the shoulder was brought in. Every method of reduction was tried and failed, and efforts were at last abandoned, when Kocher, who had just perfected his own procedure, asked to be allowed to try it. Billroth consented and the shoulder was at once replaced. Kocher, being asked, went on to describe the usual position of the rent in the joint capsule, the direction of movement of the head of the humerus as it escaped from the joint, and the final positions in which it might lie. He then showed why the manipulations which he proposed were sure to succeed if duly carried out, in the ordinary case.

Throughout a long life Kocher's devotion to anatomy and his operative work on the cadaver were unceasing. There were few days, in summer or winter session, when he did not visit the post-mortem room to demonstrate an old operation or try a new one. His book on operative surgery gives plain evidence throughout of his easy familiarity with the anatomy of every part.

Quite early in his career he realized the truth and the vast scope of Lister's teaching. In 1875, or earlier, he introduced the operation for carcinoma of the tongue, in which, for the first time in an operation upon the mouth, a strict attention to antiseptic principles was made essential. In later years Kocher himself abandoned this method in advanced cases for that which generally bears the name of Syme. His freedom from prejudice for his own intellectual progeny was shown also in his frequent choice of other methods than his own for the radical cure of hernia. The method he devised was excellent, and indeed, when first introduced, was almost universally acclaimed as the best; yet many surgeons who visited him saw Bassini's method practised more often than his own.

Kocher's name throughout the world was perhaps chiefly associated with his work on the thyroid gland. His contributions to our knowledge of the diseases of this gland and their treatment are, of course, unrivalled, and he has probably left little or nothing for anyone else to say. His operations numbered many thousands, and as occasions for a scrupulous and minutely careful technical display they were unsurpassed; every tiniest detail was arranged, every difficulty most gently overcome; there was no haste, no untidiness, no shedding of one drop of blood that could be spared. Infinite accuracy, infinite care, infinite patience, gave him results as near to absolute perfection as it is possible for surgery to go. As one retraced, in afterthought, every stage in a difficult and tedious, and perhaps prolonged operation, it seemed impossible to find a fault or to discover where anything could go wrong. From the treatment of the simple cumbersome tumors of the thyroid he was led to the study of Graves' disease, and was the first to urge, and with increasing success to practise, the surgical treatment of this condition. No one who saw him operate in a case of severe Graves' disease would ever forget his tender care, his exquisitely gentle touch, and the deft, light movement of every finger. When everything was finished, the stainless towels round the wound failed to reveal the fact that an operation had taken place. Such an operation—indeed, every operation Kocher ever did—was a supreme exhibition of what perfect anatomical knowledge, a blameless aseptic conscience, the most practised technical efficiency, unfaltering courage, unruffled calm, and the most exquisite gentleness could accomplish. Many of the great surgeons of today will frankly admit that in all these things Kocher taught them more than any other man. He was a slow operator, but there was never a moment wasted. To do an operation as he thought it ought to be done, time was necessary. Those who were privileged to see his patients, in his private clinic or in the public hospital, will agree that no patient suffered from such an expenditure of time as Kocher found necessary. His whole work demonstrated the folly of those who operate with the single desire for speed. His method was the perfect one. He never wasted an instant; he never had to hurry; everything fell out according to plan, and the most sensitive tissue could hardly have been conscious of anything but a caress.

His literary work was amazing in quantity and in its high value. He published many years ago his work on diseases of the male generative system, which younger surgeons have too soon and too easily forgotten. His books on diseases of the spinal cord and on cerebral compression displayed his capacity for the most labored inquiry into the details of difficult problems or cases and for original experimental work of the highest order.

His work in almost any department of surgery would alone have made him a reputation as a surgeon of great gifts. He devised methods, whether entirely new, or wise, sound and timely modifications of older methods, with amazing fertility, for operations upon the lungs, the stomach, the gall-bladder, the intestine, upon hernia, upon cranial nerves, and so on. He invented instruments and appliances innumerable—tables, scissors, clips, clamps, screens, and towels. These were mere incidents in his daily work. Every artist must have the right instruments for his handicraft. Kocher's new methods, practised for new conditions, required new implements, and he was not slow to design them.

As a teacher he was greatly painstaking, diligent, and earnest. For two hours, 8 to 10 a.m., in the sessions he would teach in the theatre. Cases were brought in, examined and discussed. Some skill as an artist helped Kocher to make his teaching easy to acquire. He was never impatient with an honest, if stupid, effort; his voice grew high pitched and querulous when a student would try to deceive him with a clumsy bluff.

His life was one of unceasing activity. He began work early, teaching and operating at the hospital nearly every morning, and occupying the afternoons either in his private clinic, or in his study, going with great labor through the careful records of his cases.

What is the chief legacy a surgeon leaves behind him? Personal reputation, however exalted, is soon forgotten, and the name of a distinguished surgeon may not be long remembered even in his own country. Books which at the time of their appearance are striking in new thoughts, or in the fresh presentation of old ones, cease soon to be read. Even in the long survivors, new editions change not only their contents, but perhaps the title also. The spoken word, whether by the bedside or in the theatre, is apt to slip from the memory or to be imperfectly recalled. A few characteristic sayings may chance to be handed down, but their authorship is soon lost. Wealth is, of course, rarely attained by any member of our profession, and for itself has happily no value among us.

The chief legacy which a surgeon can bequeath is a gift of the spirit. To inspire many successors with a firm belief in the high destiny of our calling, and with a confident and unwavering intention both to search out the secrets of medicine in her innermost recesses, and to practise the knowledge so acquired with lofty purpose, high ideals and generous heart, for the benefit of humanity—that is the best that a man can transmit.

Though Kocher trained no great men in his own school, as Billroth did, there are surgeons all over the earth who can say that in larger or smaller measure it is their pride to claim some humble share in this great inheritance, which Kocher, above all others, has nobly bequeathed to them."

A more intimate account of Professor Kocher is given by Lieut.-Colonel Lynn Thomas, C.B., C.M.G.

"By the death of Professor Kocher, one of the outstanding modern masters of surgery has been removed. He was undoubtedly one of the great makers of surgery of the nineteenth and twentieth centuries. I had the great privilege of knowing him for over twenty years, and during a visit he paid Cardiff and South Wales I had the opportunity of realizing how many interests he had in life apart from that of surgery.

As a surgeon he was unsurpassed in the observance of detail in technic, and during the many visits I paid to his operation theatres at the Inselspital and his private hospital I never saw a single occasion upon which one could criticize adversely, or went away with a feeling that somebody else who had specialized in departmental work could have done the work he had in hand in a more masterly fashion. I have seen surgeons on the Continent and in America who could operate with more speed, but I have never seen one whose judgment was so sound in the performance of daring operations where risk to life arose. He had one speed, which I designated the 'Kocher speed': it was uniform whether he performed the simplest or the most complex operation, either upon the extremities, the abdomen, the neck, or the brain. There is hardly a branch of modern surgery in which he has not left a valuable and permanent impress, but his name will always be connected with a revolution in the treatment of goiters, and as an illustration of the amount of work he did in this department alone I may quote from a letter I received from his son, Albert Kocher, dated March 12, 1912, the following sentence, 'My father yesterday performed his fifth thousandth goiter operation.'

I have never seen him use spectacles for operations, and in talking this matter over he said that Nature had been very good to him in giving him two eyes, the one for the enthusiasm of early age, and the other for the maturity of vigorous but advancing years. He had an extraordinary energy for work, and I have seen him working from 8 o'clock in the morning until 1 o'clock at the Inselspital, then in the afternoon perform three thyroidectomies for Graves' disease (upon a Russian, a German, and an American) at his private hospital, and afterwards pay visits and hold consultations, and turn up at 8 o'clock in the evening to dinner without any appearance of fatigue. He had an old-world courtesy, and in his home circle was always affectionate, pleasant, and humorous. The last occasion on which I visited Berne was in June, 1914, and at that time he was as alert and as keen in his work as he was the first day I met him.

Surgery all over the world has lost a great figure by the death of Professor Kocher, and it is pleasant to record that in his own native town so dear to him and Mrs. Kocher, his genius was long ago recognized; one of its main streets is designated by his illustrious name."

FRANK WENTWORTH PLUMMER, M.D.

Dr. Frank Wentworth Plummer died of erysipelas and broncho-pneumonia at his home in Malden, December 15, 1917, at the age of 47.

Dr. Plummer was born in Portsmouth, N. H., February 20, 1870, and was the son of Selwin B. and Sarah (Wentworth) Plummer. When he was three years old his parents removed to Charlestown, and soon afterward to Malden, where most of Dr. Plummer's life has been spent. He was a graduate of the Malden grammar and high schools and of Dartmouth with the class of 1891. He then went to the Harvard Medical School, where he was graduated in 1895, as he was from the Worcester City Hospital in 1896. Since that time he had been active in practice in Malden.

He had served there as chairman of the board of medical inspectors of the public schools, and he was a member of Converse Lodge of Masons and various branches of that order, as well as the Odd Fellows, the Malden Medical Society, Middlesex South District Medical Society, of which he was treasurer, and of the American Medical Association. He was a member of the Center Methodist Church.

On Feb. 12, 1903, Dr. Plummer married Deborah Allen Wiggin, daughter of the late Judge Wiggin of Malden. Dr. Plummer's wife and four children, two boys and two girls, survive him, as does a brother.

CHARLES GREENLEAF CARLETON, M.D.

Dr. Charles Greenleaf Carleton was born at Haverhill, November 1, 1843, and died at Lawrence, December 17, 1917, at the age of 74. He was a son of Colonel Samuel and Sarah (Clarke) Carleton, and studied medicine at the Harvard Medical School. He was at the school only a year when he enlisted as a medical cadet and subsequently was made an assistant surgeon in the army, serving in that capacity until the close of the Civil War. He then returned to the Harvard Medical School, and was graduated in the class of '67. He thereafter made his home in Lawrence.

Dr. Carleton had been for many years, and up to the time of his death, the president of the medical staff of the Lawrence General Hospital, was city physician in 1895-96, consulting physician at the Danvers Insane Hospital from 1881 to 1907, a member of the Massachusetts Medical Society, and president of the Essex North Medical Society in 1889 and 1890. One of his sons is Lieutenant Francis Coggswell Carleton of the United States Field Artillery, stationed at Camp Stanley, Texas. Recently Dr. Carleton had been active in arranging a patriotic meeting for the physicians of Lawrence. He was also a member of Needham Post, No. 39, G.A.R., and was chairman of the board of deacons of the Trinity Congregational Church, Lawrence.

In August of last year the physicians and surgeons of Lawrence and vicinity gave him a complimentary dinner on the completion of fifty years' active practice in Lawrence. He is survived by his widow and four children.

FRANKLIN PAINE MALL, M.D.

The recent death of Dr. Franklin Paine Mall of Johns Hopkins University was a sad loss to anatomical science in this country. Dr. Mall was born in 1862 and received his degree of M.D. from the University of Michigan. The *British Medical Journal* pays the following tribute to his work:

"He performed two great works for the profession in the United States—he introduced new methods of teaching anatomy, and he created a school which has had, through its pupils, a widespread influence. The opening of his laboratory at the Johns Hopkins University in 1893 marks the beginning of an era for the subject in the medical schools of America. Bowditch in Boston, and Newell Martin in Baltimore, with well-equipped laboratories and new methods, had laid the foundation of the modern and flourishing American school of physiology, but anatomy was still a handmaid of surgery and of medicine, and taught in old-time dissecting rooms and in the old way. Mall changed this and made the anatomical laboratory of the medical school a workshop for teaching, training, and investigation. With the true Hunterian spirit he had little faith in lectures, but immense faith in steady, continuous concentration in practical work. 'The aim,' as he said, 'is to make the course one continuous problem for each student to investigate, aiding each one with good material, and teaching him how to study.' More stress was laid on origin and function than on the acquisition of the dry details of anatomy. The experimental, investigating spirit was too strong in the laboratory to allow any but the weakest men to worry over the minutiae, and a man's examination was largely the weekly report on the character of his work. Inferior students were mercilessly asked to go elsewhere. The best men in the school were attracted to Mall by the quiet helpful way in which they were taught how to work. His own investigations cover a wide field, and with an unequalled technic for modelling and reconstruction his papers were works of art. The *American Journal of Anatomy*, the *Anatomical Record*, and the *Journal of Morphology* testify to the zeal and ability of his pupils. To few men is it given to revolutionize completely the method of teaching and investigating a subject. This Mall did for anatomy in the United States.''

Miscellany.

FREE PUBLIC LECTURES ON MEDICAL SUBJECTS.

The Faculty of Medicine of Harvard University offers a course of free public lectures on medical subjects to be given at the Medical School, Longwood Avenue, Boston, on Sunday afternoons, beginning January 6 and ending April 21, 1918. The lectures will begin at four o'clock and the doors will be closed at five minutes past the hour. No tickets are required.

Jan.	6.	Dr. William F. Snow, Major, Med. Reserve Corps, U. S. A., "Social Hygiene and War."
Jan.	13.	Dr. W. T. Porter, "Surgical Shock."
Jan.	20.	Dr. G. H. Wright, "Teeth and Their Relation to Human Ailments; A Plea for Conservation."
Jan.	27.	Miss Elizabeth Sullivan, "Home Nursing," with demonstrations.
Feb.	3.	Dr. Richard M. Smith, "Child Welfare During the War."
Feb.	10.	Miss Mary Beard, "Child Welfare."
Feb.	17.	Dr. E. H. Bradford, "Shoes and Structure of the Foot."
Feb.	24.	Bishop Lawrence, "Social Infection and the Community."
March	3.	Dr. L. W. Baker, "The Deformed Mouth of a Child; its Effect on the Child's Future."
March	10.	Dr. L. J. Henderson, "Food: How to Save It."
March	17.	Dr. F. W. White, "What to Eat during War."
March	24.	Dr. Percy G. Stiles, "Some Aspects of Fatigue."
March	31.	Dr. Glenn I. Jones, Major, Med. Corps, U. S. A., "Camp Sanitation and Control, and Hospital Administration at Camp Devens."
April	7.	Dr. J. Bapst Blake, "Accidents and Injury, First-Aid" (with simple demonstrations).
April	14.	Dr. E. H. Place, "Immunity to Contagious Disease."
April	21.	Dr. I. Chandler Walker, "Hay Fever and Asthma."
April	28.	Dr. Julius Levy (under The National Food Committee), "Food Administration during the War."

Copies of this announcement and further information in regard to any of the lectures may be obtained by addressing The Chairman of the Committee on Public Lectures, The Harvard Medical School, 240 Longwood Avenue, Boston, Mass.

SOCIETY NOTICE.

The Massachusetts Society of Examining Physicians—A meeting will be held at the Copley-Plaza Hotel on Jan. 3, 1918.

SUBJECTS

Medical Administration of Workmen's Compensation Insurance. Dr. George E. Tucker of California National Industrial Board.

Emergency Hospital Exemplified by the Halifax Disaster. Dr. Harold Giddings of Boston.

Dinner at 6.30.

Members of the profession cordially invited.

J. H. Stevens, *Secretary*.

NOTICES.

Massachusetts Society for Mental Hygiene.—Annual Conference to be held at Lorimer Hall (Tremont Temple) Boston, Wednesday, Jan. 9, 1918.

Afternoon Session, 3 p.m.—Mental Hygiene and the War. (1) Nervous and Mental Breakdown from War Strain and Shock, Capt. John T. MacCurdy, M.O.R.C., New York; (2) What Canada is Doing for her Soldiers who Return with "Shell Shock," Dr. F. H. Sexton, Vocational Officer, Military Hospitals Commission, Canada; (3) What this Country is Doing to Keep from its Armies the Nervously and Mentally Unfit and Adequately to Care for those who become Disabled by the Shocks and Strains of War, Dr. Frankwood E. Williams, Associate Medical Director, National Committee for Mental Hygiene, New York City. (Moving pictures of groups of "Shell Shock" cases will be shown.)

Evening Session, 8 p.m.—The Defective Delinquent. (1) The Relation of Mental Defect and Disorders to Delinquency, Dr. Victor V. Anderson, Medical Director, Medical Service of the Municipal Court, Boston, Dr. William Healey, Director, Judge Baker Foundation, Boston; (2) The Defective Dlinquent in Court, Justice Frederick P. Cabot, Juvenile Court, Boston; (3) The Probation Problem of the Defective Delinquent, Herbert C. Parsons, Deputy Commissioner of Probation, Boston; (4) What Shall be done with the Defective Delinquent in the Penal Institutions? Col. Cyrus B. Adams, Director of Prisons, Boston. Mrs. Jessie D. Hodder, Superintendent, Reformatory for Women, Sherborn; (5) What Should be the Attitude of the Alienist toward the Defective Delinquent? Dr. George M. Kline, Director, Commission on Mental Diseases, Boston; (6) A Practical Program for Dealing with the Defective Delinquent, Representative B. L. Young, Weston.

Boston Medical Library.—The Annual Meeting of the Boston Medical Library will be held in Sprague Hall on Tuesday, Jan. 8, 1918, at 8.15 p.m. Dr. E. A. Crockett will give a talk entitled "Observations of a Red Cross Officer in Europe."

Walter L. Burrage, M.D., *Secretary*.

The Boston Medical and Surgical Journal

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THE EXAMINATION OF SOLDIERS FOR TUBERCULOSIS IN THE U. S. ARMY.

BY EDWARD O. OTIS, M.D., BOSTON,

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NEVER before in any war or in any army have such comprehensive methods for detecting and eliminating tuberculosis from the fighting force been inaugurated and pursued as are now in operation in the U. S. Army. The Surgeon-General with his profound knowledge of and experience in preventive medicine determined, early in the mobilization of the great army, that, so far as humanly possible, tuberculosis should not be a leading factor in incapacitating men, already trained and on the fighting line in Europe, from further service. The deplorable losses in the French army from this disease have been shown by Biggs[1] after his return from investigating the subject in France. "By the end of December, 1915," he says, "86,000 soldiers had been returned to their homes with active tuberculous disease." And "In February of this year it was estimated that about 150,000 had thus been returned, and more are constantly being discharged for this cause." In the armies of other warring countries the history of France has been repeated to a greater or less extent, he says, the least so in England and in the Canadian Expeditionary Force. Even with all imaginable precautionary measures our army is sure to have many losses from tuberculosis, owing to the static conditions in trench life, with all the accompanying hardships under which the warfare on the Western front is conducted, so different from the fighting in the "open" of other wars, when life led in the open air, to a certain extent, may be supposed to have counterbalanced other unusual hardships and in which even active tuberculous soldiers have maintained their strength and fighting ability and even improved.

In order to accomplish his object, the Surgeon-General ordered that all the troops in the then existing armies should receive a special examination for tuberculosis, and the management of this truly colossal task was put into the hands of Col. G. E. Bushnell of the United States Army, who had for many years been at the head of the United States Army Sanatorium at Fort Bayard, New Mexico. No more experienced or efficient man could have been selected.

The problem with the New England National Guard was to examine every single man, officers as well as soldiers, about 30,000 in all, and to complete this examination within about two months before the force sailed for Europe. It was done in rather less time. For the purpose of this examination an officer of the Reserve Corps, experienced in tuberculosis work, was detailed to take charge of the work and under him was a number of contract surgeons, some giving their whole time and some half time, all of whom had been selected for their fitness for the work on account of special experience in tuberculosis—in hospital, sanatorium or dispensary. What was required in the examinations can perhaps be best shown by quoting the instructions given to each examiner:

"Instructions for Suggestive Physical Examination of the Chest."[2]

"The subject should be stripped to the waist and scrutinized for various developmental defects of the thorax and if found associated with an apparent delicate constitution may constitute a cause for rejection or discharge even if no definite disease is discovered. All that is absolutely necessary is to determine the presence of a tuberculous lesion of sufficient activity to constitute a cause for rejection or discharge. This can be done in well marked cases of active tuberculosis in a few moments. To demonstrate the absence of disease in suspicious cases naturally requires a longer time.

"*Auscultation.*—The subject is instructed to breathe more rapidly and deeply than normally, yet avoiding noisy respiration and relaxation of the shoulder muscles as much as possible. The examiner standing in front of the subject applies the stethoscope to the lower axillary region going upward anteriorly comparing points on both sides; note carefully any change in breathing sounds from the level of the third rib upward.

"*Examination of Back.*—Secure the breath sounds right base, proceeding upward, comparing symmetrical points on either side.

"*Physical Signs.*—Look especially for (1) Harshness and jerky inspiration. (2) Prolonged expiration. (3) Fine crackling râles. (4) Feeble breath sounds. (5) The presence of any type of râle is cause for a deferred examination. (6) Search for enlarged lymphatic glands.

"(a) The question of activity is determined by the presence of typical râles; if disseminated râles are present the examiner needs to go no further to recommend rejection, discharge or deferred examination.

"(b) Deep expiration and cough will be necessary to elicit the indeterminate râles.

"(c) Indeterminate râles in abundance are easily heard and are usually cause for rejection, discharge or deferred examination.

"(d) Severe pleural adhesions which bind the lung tissue firmly to the thoracic wall is cause for rejection or discharge.

"(e) It is left entirely to the individual examiner to determine whether a deferred examination is advisable. A recommendation for discharge should not be made until after a careful deferred examination.

"(f) Examiners are detailed for the special work of detecting tuberculosis. They will, of course, take the same action if they encounter conditions in the thorax due to other causes which demand discharge, special treatment or a deferred examination, but these cases should be reported to the camp surgeon with recommendations."

Although it is stated in these instructions, "that all that is absolutely necessary is to determine the presence of a tuberculous lesion of sufficient activity to constitute a cause of rejection or discharge," it was also determined that every case which exhibited undoubted evidence, from the physical examination, of non-active, latent or arrested disease should either be recommended for discharge, or for further careful investigation by other members of the examining board. The reason for rejecting non-active cases is thus stated by Biggs[3]: "Any man," he says, "with even a very limited amount of pulmonary tuberculosis that is latent or arrested, is almost certain to break down under the physical strain of military training and army life, and a focus of disease previously latent or arrested will almost certainly become active." This statement seems to the writer to be rather extreme; in the first place a "very limited amount of pulmonary tuberculosis" is not always easy of detection; and, secondly, it has been found by many observers that arrested cases may bear the strain of military life perfectly well. "Clinically cured tuberculosis subjects," says Roepke, quoted by Fishberg[4], "who stand the training well may be sent to the front." Fishberg, after citing various European authorities with regard to the effect of military service upon non-active tuberculosis, concludes that the facts which he has just cited would seem to indicate that military service in the field is no more likely to reactivate dormant or quiescent tuberculosis lesions "than any other civil occupation requiring muscular exertion, walking, exposure to the vicissitudes of the weather, etc." Life on the firing line, however, under trench conditions, makes far greater demands upon one's vitality than "muscular exertion, walking and exposure to the vicissitudes of the weather, etc."

The medical superintendent of the Manitoba Sanatorium, Canada, Dr. Stewart[5], who has had experience in the care of tuberculous soldiers, says, on the other hand, that the war has not increased the number of tuberculous men so much as it has stirred *latent* disease into activity. "War, therefore," he continues, "and the training for war, creates the very conditions which lead to tuberculosis breakdown. That *latent* disease subjected to such conditions should in hundreds and thousands of cases flare up into *activity* is only to be expected."

The experience in the British Army is of a similar nature. "A twofold influence is exercised by military service on pulmonary tuberculosis," says Dr. H. Hyslop Thompson,[6] "while the conditions inseparable from active service *abroad* tend to reactivate the disease in soldiers with latent tuberculous foci or to induce an entirely fresh infection, the open-air life, physical exercise and ordered routine of military training in *this country* undoubtedly exercise a beneficial effect on the health of soldiers who have latent pulmonary tuberculosis, or who, from inheritance or other causes, are predisposed to the disease."

It is also to be remembered that these men of the National Guard were soon to go to the front and there was no time to keep them under observation for any extended period. It may be mentioned here that all the men had received at least two previous examinations, one when they first enlisted, and the other when they were taken over by the national government into the federal service. Some, for one reason or another, had received several additional examinations. I recall the case of one soldier who said he had been examined six times previously. It was obviously impossible to obtain any previous history from the rapidity with which the examinations had to be made and consequently one had to depend chiefly or wholly upon inspection and the physical signs. Moreover, one had to work with great celerity in order to accomplish such a stupendous task as the examination of nearly 30,000 men—the exact number being 29,950—in the short space available. After a certain amount of training, however, in this rapid method of action, the "flying squadron of heart and lungs," as we were facetiously called, was enabled to examine 100 men or more per examiner a day, and with a fair degree of accuracy, I believe. Col. Bushnell[7] states that in an experimental examination of 25 men at Fort Bayard Sanatorium the time occupied was 58 minutes, the time for each patient varying from one and one-half to two and one-half minutes. "Of course," says Col. Bushnell, "a diagnosis made with such speed is more or less of a 'snap' diagnosis, and the method is not recommended for universal adoption except as a preliminary examination to select cases that may appear doubtful for later and more thorough study. Still the results were more accurate than had been expected, and show, it is thought, unmistakably, that a sufficiently correct diagnosis to exclude cases of manifest and active tuberculosis from the army could be made very quickly." Of course there was a certain number of border-line cases or suspects upon whom, both in justice to the examiner, the service, and the man himself, a definite diagnosis could only be made, if made at all, by a second or repeated examinations at intervals after observation. The limited time, however, did not permit of an observation period, and the only thing to be done under the circumstances was a consultation over the case by several members of the examining board; and if three of the number agreed upon a verdict, the man was passed or rejected, according to the decision. If no three men could agree, the man was passed. The active cases as evidenced by persistent râles and generally defective development, with other corroborative evidence, were easy of detection and there was no doubt as to their rejection except in certain cases of acute infection, such as influenza or bronchitis. There were, however, surprisingly few of patently open active cases. The diagnosis of the non-active, latent or arrested cases, the "old tops," as some one called them, was not always so easy; here, the diagnosis had to be made mainly from inspection, the quality of the resonance and respiration, and the voice sounds, with what little history one could obtain in the limited time.

Undoubtedly mistakes were made with these cases and some were rejected who, upon reexamination at intervals, would not have given sufficient evidence of any tuberculous infiltration or old fibroid condition. I believe, however, that such mistakes were few, and all such cases had the advantage of an examination by several experts, at least three of whom had to agree before the final judgment for rejection was pronounced. It seemed regrettable to reject a man who had already been partially trained and who was doing his duty without apparent discomfort, who appeared to be well and robust and who had no symptoms, but the assumption was, as has been said above, that under the strenuous life and exposure of trench work he would break down and the latent or arrested disease become active. Of course there was the chance that he would go through all right, but it was considered that the chance was largely the other way. It would seem sensible that some service should be arranged for such cases whereby they could be retained in the army and the training they had already received be utilized. Klebs[8] suggests the creation of a service for tuberculous subjects otherwise fulfilling certain minimal standards, in which they could be under observation and yet be trained for some of the many occupations in the rear of an army which "modern military practice tends more and more to assign to especially organized and trained bodies of unarmed men." Elliott[9] also is of the opinion that "men who do not come up to the standard required for service in a combatant unit (and among such we may include our tuberculous subjects and arrested or latent cases) may yet be fit for one of the non-combatant services—or may be attached to the home service in clerical or other light duties and relieve a man physically fit for overseas."

In addition to the rapidity with which the examination had to be made there were other inconveniences under which the work had to be done which added to its arduousness. In the first place, all sorts of places had to be utilized in which to conduct the examinations—outdoors under the trees or in a field or any open space, in noisy mess halls, in crowded tents, rarely in any place where it was quiet, so that one had to become oblivious to extraneous noises and hear only the sounds elicited by percussion or heard on auscultation—not always an easy thing to do. Again, after continuous and rapid work for a time, one's ears became so sensitive that it was actually painful to apply the stethoscope to them and one's head became so weary that finally the examination became a sort of automatic procedure instead of an intelligent mental process. Experience and training, however, largely obviated this difficulty.

Further, one had to watch out for deception. The man under examination might be trying to get out of or remain in the army, and in consequence would give false symptoms or misleading answers or would wilfully breathe in such a way as to make it difficult to interpret the respiratory sound. Such cases, however, were comparatively rare.

As was stated above, most of the men had received a general physical examination at least twice before; one upon their original entrance into the National Guard, and again when they entered the federal service, and the thoroughness of these examinations, so far as the lungs were concerned, appeared to vary considerably, for quite a number of obviously active cases, beyond the incipient stage, had somehow slipped through. Probably the eagerness to fill up the ranks to the maximum strength had much to do with this.

The effect of the previous occupation was strikingly noticeable in many cases; in general, the men who had led outdoor lives, like the lumbermen of northern Maine, or the farmers of Vermont, were a far more rugged set, and were almost entirely free from tuberculosis, while those who had been operatives in mills and factories and had led an indoor life were far inferior in physical development and afforded many more cases of tuberculosis. Those who had used alcohol more or less constantly also gave many cases of tuberculosis. The many cases of slight acute bronchitis, amounting to almost an epidemic in some camps, made the interpretation of localized râles without other evidence difficult if not impossible. Such cases, of course, needed interval observations in order to arrive at a definite diagnosis, but as this was not usually possible under the circumstances the cases had to be decided upon the present condition with such additional evidence and previous history as could be obtained in the limited time.

As the greater part of the examinations had to be done in camps the employment of the x-ray in suspects and doubtful cases was not available, nor was the use of tuberculin feasible. As regards x-ray examination as the sole criterion in determining the existence of tuberculosis —as I understand was done with one of the New York regiments—I believe that more errors in judgment will be made as to rejection or retention of the subject than when the decision is based upon a careful physical examination by an experienced expert. As an aid or a decisive factor in doubtful cases it is of undoubted value.

As to the results, out of 29,950 men examined 680 were found to be tuberculous and were recommended for discharge, a little over two per cent. It is to be remembered, however, that the greater number of these were of the non-active or latent type. As will be observed, the conditions under which this large body of men were examined were far from ideal, both on account of the limited time at our disposal and the often unfavorable circumstances under which the work was done. Still I believe that the results were substantially correct and that few men were discharged or retained who ought not to have been. With one or two exceptions we received most courteous treatment and cordial co-operation from the commanding staff and the regimental surgeons, which rendered our duties very much easier. Coincident with our appearance or just preceding us in some of the camps was the psychiatric squadron, so that it would not have been strange if the officers had been somewhat impatient at this succession of examinations and asked "what next?"

The following is a general suggestive scheme for tuberculosis examinations when they can be made under more favorable auspices in a permanent camp and with sufficient time for more leisurely work and for observation:

I. So far as possible only experienced experts should be employed; the technic of percussion and auscultation may be learned in an intensive course of instruction and more or less skill acquired, but judgment in making a correct interpretation of signs and symptoms comes only from long experience.

II. Only a certain number of examinations should be made by the examiner in a day. After a period of time—differing with different examiners—spent continuously in percussion and auscultation one becomes mentally weary and his ears "dull of hearing" and his judgment uncertain.

III. The place of examination should be such that comparative quiet can be maintained; one can make an examination under noisy conditions, but it is far more exhausting to the examiner and a certain amount of accuracy is likely to be sacrificed.

IV. A short history should be taken of each soldier, which can be done by an intelligent and honest, non-commissioned officer according to a prepared schedule of which the following questionnaire is an illustration:

(a) Have you ever had pleurisy, pneumonia, typhoid fever, influenza or any severe illness?

(b) Did you ever spit up blood?

(c) Have you been losing weight or strength recently?

(d) Are you short of breath on exertion?

(e) Have you a cough, and, if so, how long has it lasted?

(f) Are you subject to colds?

(g) How is your appetite and digestion?

(h) Do you use alcohol?

V. All suspicious cases should be deferred for a second examination and consultation, and if then the doubt still exists the subject should be kept under observation for a period of time, or, if an x-ray outfit is at hand and a competent technician in charge, an x-ray negative can be taken. It is a common experience that suspicious physical signs upon the first examination may at a subsequent examination at an interval of a few days be found to have entirely disappeared.

VI. When sputum is obtainable in a suspected case it should, of course, be examined, and for this purpose a clinical laboratory should be at hand as well as for other bacteriological examinations.

VII. All cases with any developmental defects of the chest, such as rachitis, or with defective musculature, should receive especial attention in the examination.

VIII. In suspicious cases, particularly with a pulse above the normal, the temperature should be taken at stated periods for several days.

IX. All acute respiratory infections, such as bronchitis, influenza, laryngitis, etc., should be kept under observation in the hospital.

Elliott[10] advises that each man should be re-examined once in three months as a routine measure. And "a most thorough medical examination is essential," he says, "when he is warned for departure overseas." While this may not be necessary or possible with a large army, and when departures are uncertain and often unexpected, at least all cases which for any reason aroused suspicion in the former examination should be re-examined, at intervals, as well as those suffering from any "bronchial trouble." If "eternal vigilance is the price of liberty," it is equally the price of keeping tuberculosis out of the army.

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THE AFTER-CARE OF THE WAR CRIPPLE.*

By E. A. McCarthy, M.D., Fall River, Mass.

The privilege of addressing you I consider not only an honor but a patriotic duty to discuss with you such an important and timely subject as "The After-Care of the War Cripple." The preceding speaker has told you what is to be done with the soldier maimed and scarred, from an industrial standpoint. Allow me, if you will, to tell you a few things about the status and purpose of the orthopedic surgeon in this conflict.

In order that there should not be any misunderstanding, it perhaps would be the proper thing to define the word, "Orthopedic," for we have been called, by the laity, many beautiful and sacred names. We have been called the bone doctor, the foot doctor, the toe doctor; and one woman, who called at my office, eagerly inquired if I was the toe-nail doctor. According to Col. Sir Robert Jones, who, in the opinion of orthopedic surgeons, is probably one of the greatest in the world, the misspelling of the word, "Orthopedic" is probably responsible for the wrong understanding of its service. The fact that in America the word is spelled o-r-t-h-o-p-e-d-i-c leads many to believe that the p-e-d is derived from the Latin word, *pes*, meaning foot, and therefore it is a common error that this specialty deals with disorders of the feet. The word "Orthopedic," properly spelled, is as follows: o-r-t-h-o-p-a-e-d-i-c, and it is derived from the two Greek words, ὀρθός meaning "straight," and παιδίον, meaning "a little child." It was originally intended to indicate that orthopedic surgery has to deal with the straightening of deformed children.

In the last three years' war, the experience of our Allies has shown that we must consider the soldier, wounded in battle, from a different aspect than ever before. In past wars, it was the practice, if a man was totally or partially unfit for further service to his country, to give him a pension and allow him to shift for himself, the nation believing it had done its part when this questionable form of charity had been provided. The enormity and extent of the present conflict has shown that such an attitude by any nation toward the disabled soldier would lead to an economic catastrophe and almost to the destruction of the nation.

Just think for a moment what the condition of Great Britain, with 600,000 crippled soldiers for whom no special preparation had been made at the beginning of the war, would be today, and in the days to come, if she had not inaugurated those marvelous curative workshops for the rehabilitation of her disabled soldiers by the aid of orthopedic surgery.

Probably the greatest leader of this particular phase of the war has been Col. Sir Robert Jones of Liverpool, and through him has grown up the system in vogue in the British empire by which cripples are taught, as soon as possible, some form of training whereby they may earn either more than they earned before the war or very nearly as much. Of course, this depends upon the amount and character of the disability with which the soldier is afflicted. In his very interesting book, under the very modest title of "Notes on Military Orthopedics," Col. Sir Robert Jones tells how, when preliminary stages of operative and surgical treatment are over, the orthopedic hospital affords a steady gradation through massage, exercise, and stimulus to productive work which is commenced as an integral part of the treatment as soon as the man can begin to use his limbs at all. Indolent and often discontented patients are thus converted into happy men who soon begin to feel that they are becoming useful members of society and not mere derelicts.

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* Read at the Rhode Island State Conference of Charities and Correction, on Oct. 24, 1917.

The men are given employment in the tools they understand or an occupation suitable to their disability. For instance, if a man is put on a machine his mind turns to the work that he is doing and he very soon forgets his disability. Those of us who have any imagination at all, and particularly the orthopedic surgeons who have been confronted with the various propositions arising out of industrial accidents, cannot fail to appreciate that it is far better to keep a man busy at regular, useful and productive work, rather than at card-playing, smoking, or doing other trivialities in a hospital ward.

About a week or so ago, at a meeting of the Boston Orthopedic Club I listened with a great deal of interest to Maj. E. G. Brackett, who is the director of orthopedic surgery in the Medical Department of the United States Army in this country; and he outlined the purpose of the United States Government in the present crisis as regards the treatment of crippled soldiers. To a great extent, the system in vogue in England is, with a few exceptions, to be adopted by this country. It is known that the English and our Allies made some very bad mistakes in the beginning, but it is believed by the government medical authorities that they are now handling the cripple situation with a great deal of skill. It is the purpose of the government to establish in France about 35,000 orthopedic beds, divided into units or hospitals of about 2500 beds each; also to construct in this country several reconstruction or rehabilitating hospitals in different centers of the country. These hospitals are to be mainly orthopedic in their nature, but will include other specialties as well as general medicine and general surgery. It has always been the contention of the orthopedic surgeon, understanding deformity as he does and its final result, and understanding joints, muscles, and nerves in their various functions and abnormalities, that he can forestall some of the terrible deformities resulting from injury, provided he is on the ground or near the place where the injury takes place, to direct the methods of treatment which will be conducive to either a very good result or to the best obtainable result under the conditions; hence the establishment of orthopedic beds in France.

The purpose of the reconstruction hospital on this side of the water is to take care of those cases which can be transported to this side without danger to the patients who need further surgical treatment and training along industrial lines for their further service in life. Of course those who come across the water will be the soldiers who are unfit for further military service on account of their disabilities, the orthopedic hospitals in France sending back to the front as many as can go back after treatment. It is also intended in these reconstruction hospitals on this side of the water to have them very completely equipped. They will have orthopedic surgeons especially trained in their line, general surgeons, internists, and all the different specialists. They will also have a department of massage, electricity, and what is known as the curative workshop, about which I have already spoken.

In order to conduct properly these hospitals it will be absolutely necessary that the communities in which they are established shall have the strict co-operation and interest of all industrial establishments situated near or at the place where the hospital is located. The problem of handling these cripples is one requiring ingenuity and skill, because on reading many of the journals of England on this particular line of work, we find that many of the soldiers do not seem anxious to pursue an industrial line, preferring a pension and a life of ease and idleness, rather than work. On account of this it has been deemed wise by the United States Medical Department to state that, until a soldier is entirely cured and educated or trained along industrial lines, he is to be kept under army discipline and is not to be discharged from the army until he is ready to perform usefully such service in civil life as his reconstructed crippled condition will permit. This precaution upon the part of the Government is undoubtedly a very wise provision. Today in civil life we are confronted with this very problem, and especially in industrial accidents where there is no law to compel a man, crippled through an industrial accident, to train and to be educated as far as possible for some other form of work. Of course I recognize that the State, in making laws of this kind, can go only so far before we get to a line where it may be said that the man's individual freedom is restricted; and it is not for me to suggest that individual freedom, as a general proposition which we prize so highly and regard so sacred in this grand democracy of the United States, shall be substituted by methods which have made the German Empire of today the greatest autocracy in the world.

I am not here to argue the pro and con of the advisability of adopting such compelling force in our civil accidents. I think, however, that we all agree that if this war continues for any long period of time, that the knowledge gained in the treatment of war cripples will greatly change our present methods of caring for the industrial cripple. I might go on here and cite many instances and defects under the Industrial Compensation law on account of which a great many of our industrial cripples are not pursuing a proper line of work or making even enough money to support themselves—much less supporting their families.

There are many cases, as I say, that might be cited as bad examples of the workings of the present industrial laws. Just by way of illustration, let me cite one in which the individual might have been willing to take up training and education for his betterment, but there was no way or no law which compelled either insurance companies or anybody else to follow this case. This man was an alien in this country, with a wife and seven children, who injured his foot in one of our neighboring cities,—not Fall River,—by the falling of an elevator. He was treated by two practitioners for about four weeks during the acute stage of his injury, since when he has been compelled to shift for himself. This accident happened last January and since that time the man has been going around with this bad foot with no treatment at all, and with no facilities to help him by proper training. He was sent to me the other day by an attorney in Fall River for examination, and I found that he was suffering from a permanent injury to the foot, due to a fracture of what is called the os calcis, better known to the laity as the heel-bone. The x-ray demonstrated that he had several bony spurs coming out from the bone, making it absolutely difficult for that man to walk at all without severe pain.

How this man and his wife and seven children subsisted on $7.00 a week and what the outlook for him is, I am unable to say. This would be easy to determine, however, had we some system, such as is being instituted for the war cripple, and would make a gratifying change in our industrial cases of the future.

Let us now consider, for a moment, the idea of the Government in relation to reconstruction hospitals. If I understand Dr. Brackett rightly, it is the purpose of the Medical Department of the Army to establish in different parts of the United States these various reconstruction hospitals, the purpose of which is to rehabilitate, re-educate, and retrain the crippled soldier for further service in civil life. Of course, the greatest factor in the line of treatment will be orthopedics, supplemented and aided by various specialists, such as brain men, eye men, nose and throat men, x-ray men, general surgeons, and internists. It is computed that at least seventy per cent. of the returning war cripples need some form of orthopedic treatment for their rehabilitation. There can be no doubt and there should not be, in the minds of medical men, that with a properly organized system such as this, great good will result. There can be no question in the minds of those who have studied and thought, to any extent, of these reconstruction hospitals, that in the form devised by the Government exceptional opportunities for treatment are given to the crippled soldier.

The question now arises whether this method, as outlined by the Department of Medicine in the United States, is to work to the best interest of the country as a whole. I wish, in discussing this question, to make my position clearly understood; I do not propose to offer adverse criticism on the splendid work that is being done, because I greatly admire the present administration and the remarkable results obtained by them in such a remarkably short time. We, living at home, can have no idea of the enormity and multiplicity of details that must be carried out to prepare a nation for war. especially when that nation is a democracy, does not believe in militarism and its people are peace-loving in their general make-up. I only desire, in my humble way, to offer some constructive criticism concerning some of the problems which confront us in this great struggle and the attending ills that are sure to follow.

These hospitals are to be created as separate Government units, operating apart from the civil institutions. Now the thought I wish to suggest to you in relation to these hospitals is this: Let me say that it is a very, very serious question, and it concerns you as members of this great electorate of our country. At the present time we have, in this country, in most of our large cities of 30,000 or over, finely equipped general hospitals. Is it wise to deplete these already existing institutions of some of their staffs, or, instead of the reconstruction hospitals, should we expand the general hospitals, as at present constituted, to carry on the work intended by the Government in these reconstruction hospitals?

You know, and I know, that the number of doctors in this country, as compared with the amount of population, is not very large, and conservation should be practised here just as well as in other departments of life.

The purpose of the selective draft, inaugurated by President Wilson, was one of the greatest war measures, in my opinion, ever instituted by any nation in time of war; and that principle applies to the medical profession just as well as to the layman. Selection and organization are great factors in organizing any army for the proper welfare of the nation. I realize the army takes precedence to everything, but the President has often told us that the man working at home is just as essential to the success of the army as the soldier himself.

This question of the establishment of the reconstruction hospitals and the desirability of such, as opposed to the further expansion of the civil hospitals, we ought to consider most seriously. The American Hospital Association, I understand, is opposed to this plan of separate reconstruction hospitals; and in talking this over with a trustee of that association recently, he said they would present reasons this week to the Surgeon-General, why, in their opinion, this plan was not of the best. Of course, the trustees of civil hospitals are very much concerned with this proposition because they realize that it is their obligation and duty to care for the civil population, and if their staffs are depleted, the problem, to them, becomes one difficult to handle.

The question also arises whether the civil hospitals, caring, as they do today, for the many industrial cases, may not profit, to a great extent, in knowledge and education, by taking care of the war cripple; and thereby become a greater benefit to the civil community in the future after the scars of this great world conflict have healed. The soldier has made a great sacrifice for his country; it is your duty and my duty to see to it that he gets the best possible service that can be had on his return from the front. The Government, establishing these new hospitals has this in view, but the scarcity of doctors and the care of the community itself are to be considered. I am not here to criticize, and I am glad to say that the criticism that was rampant and undeserved a few months ago, anent the preparation of the Army and Navy, is now fast disappearing, and that we, as a nation, are beginning to appreciate that the men in Washington, and those who are planning and directing the preparation for our defensive operations, are bringing this nation to a state of proficiency which the German autocracy failed to estimate when, by persistently carrying on an inhuman war, they forced this peace-loving nation into a world-conflict for the purpose of making the world safe for democracy.

PAROXYSMAL TACHYCARDIA OF VENTRICULAR ORIGIN.*

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During the last two years an interesting group of tachycardias has been observed in the Mayo Clinic, and the infrequent occurrence and the importance of recognition merits this report. The literature contains a wealth of material dealing with tachycardia of sinus and nodal origin, but few articles could be found relative to tachycardia having its origin in the ventricles.

The rhythmic cardiac impulse takes its origin in the sino-auricular node[3] or "pacemaker," a collection of specialized tissue lying in the sulcus terminalis at the juncture of the superior vena cava and the right auricular appendage. This has been established by the experimental work of Lewis,[6] Oppenheim and Oppenheim,[5] Eyster and Meek,[9] who found this structure to become electro-negative before the rest of the sinus region. The function of "pacemaker" may be assumed by other portions of the heart, either within or outside of the conduction system, with the establishment of an ectopic rhythm.

Lewis[7] has classified these abnormal rhythms as homogenetic and heterogenetic. The former is characterized by a relatively slow rate, the onset of the rhythm is gradual, the seat of impulse production is probably always within the system of specialized tissue (conduction system) and the heart is under control of its extrinsic nerves. He believes this type to be due to exaggerated physiologic processes.

In contradistinction to this, the heterogenetic type presents a rapid pulse and rapid onset; the seat of impulse production may be within the system of specialized tissue or without, and the heart is not under control of its extrinsic innervation. This type is believed to result only from pathologic processes.

Paroxysmal ventricular tachycardia is heterogenetic and, as far as we know, is the result of myocardial disease. The recognition of this condition is of the utmost importance and can be made with certainty only by means of graphic records. The introduction of the electrocardiograph has made possible the identification of obscure tachycardias.

Experimental studies have not only clarified the mechanism of this disorder but have suggested etiologic processes. When a single induction shock is applied to any portion of the ventricle during its resting period a single premature contraction occurs.[6] The contraction evoked is not proportionate to the stimulus applied but always maximal,[1] constituting the well-known "all or none" law of Bowditch, and does not occur when the muscle is in the state of contraction[8] (refractory phase).

Regular series of suitably arranged induction shocks produce series of premature ventricular contractions simulating the graphic records of ventricular tachycardia. Lewis[6] produced premature ventricular contractions by ligation of the coronary arteries constantly, by tying off the left descending branch and in most instances by impairing the circulation in the right vessel. As the nutrition of the ventricle became progressively impaired, series of heterogenetic contractions occurred, the sequence becoming longer as the nutritional changes became more marked.

By the intravenous injection of salts, Rothberger and Winterberg[11] produced this tachycardia in dogs. They found that combined stimulation of the vagi and accelerators caused cessation of the heart beat, but after injection of 5-10 mg. of barium chlorid in 1% aqueous solution, premature ventricular contractions occurred. With doses of 25 to 50 mg., minus accelerator stimulation, ventricular tacchycardia was produced, and at times a transient arrhythmia.

Calcium chlorid 100 to 200 mg. in 10% aqueous solution, produced similar results. They concluded that these salts increase the ventricular irritability, but stated that the nodal tissues are not appreciably influenced. The electrocardiogram exhibits series of premature ventricular contractions, the complex forms varying with the point of origin in the ventricles. Iden-

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tification of auricular contractions during the tachycardia is frequently difficult, but careful measurement shows that retrogression does not occur, as the first auricular complex of the normal rhythm falls at the proper point.

Lewis[6] maintains that the auricles and ventricles contract at the same rate, for each complex is identical to the adjacent one, and if auricles and ventricles were contracting at independent rates, the auricular complex would at times be superimposed and destroy the contour of the general curve. A case of ventricular tachycardia is reported by Palfrey with polygraphic tracings in which the ventricular rate exceeded the auricular. This did not occur in any of the cases reported in this paper.

One other case of ventricular tachycardia is reported in the literature.[2]

Two of our cases revealed impairment of conduction, one in the junctional tissues and one beyond the main branch of the bundle of His.

Five cases of paroxysmal tachycardia of ventricular origin have come under the writer's observation during the last two years, and this disorder has occurred only in .047% of the abnormal cases. Three cases have occurred in males and two in females—the youngest one 21 years, the oldest 62 years, with an average age of 41.4 years. Four of the patients gave definite histories of previous infection with the streptococcus group. Syphilis could not be determined in any case.

The symptomatology in all cases was strikingly uniform, all histories revealing distressing palpitation with tachycardia, induced by exertion or excitement. The paroxysms had sudden onset, stopped abruptly and lasted from several minutes to several weeks. Vertigo attended the paroxysms in three cases, and two patients complained of nervousness. Exertion dyspnea was a constant symptom. One case presented slight pitting edema of the lower extremities.

Objectively the cardiac examinations revealed little of significance. In all cases there was slight increase in the dulness to the left (one-half to three-fourths inches) and valvular disease was not demonstrated in a single instance.

The lowest pulse rate during the paroxysms was 109, the highest 267, and the average of all recorded pulse readings was 174.

The pathologic changes in ventricular tachycardia cannot be identified as entities as no reported cases were disclosed in a search of the literature. The experimental work of Lewis,[6] however, suggests obliterative coronary disease and its attendant nutritive changes as a hypothetical pathologic picture.

One of our patients died a suicidal death, and we were afforded the opportunity of a necropsy. The left coronary artery was distinctly atheromatous, which is very significant in view of Lewis' work. The myocardium of the ventricles presented a few areas of fibrosis, the mitral and tricuspid leaflets were thickened, but apparently competent and atheroma of the aortic valves was found. The thoracic and abdominal aorta were atheromatous.

In all probability, any condition increasing ventricular irritability is a potential factor in the production of this rare condition, and until more autopsy material is available, the conclusions as to lesion types must remain hypothetical. The gravity of the condition depends, of course, on the degree of myocardial damage and the duration of the paroxysms. One patient gave a twenty-six year history of attacks, and the duration of paroxysms gradually increased with progressive evidence of myocardial insufficiency; the last one in which the patient was observed lasted six weeks. Cardiac reserve is, of course, the all-important factor in the consideration of heart disease, and this means largely myocardial quality. The maintenance of circulation is dependent on ventricular, and not auricular action, and obviously any abnormal ventricular rhythm must be regarded as potentially a grave disorder. Lewis[4] emphasized this point, stating that ventricular tachycardia borders on fibrillation, and ventricular fibrillation, as far as we know, is incompatible with life.

Little can be said relative to treatment. Two patients were treated, both being placed on the tincture of digitalis in doses varying from 1 to 3 cc. three times daily. The one patient was placed at rest in bed and digitalis was administered three times, to toxic effect, without any change in the abnormal rhythm. He was under observation twenty-eight days. The other patient was symptomatically improved, but his paroxysms had never exceeded a few hours.

In cases showing evidence of myocardial insufficiency digitalis should be employed, but it is very questionable whether the abnormal rhythm can be arrested by its administration. In two cases vagus pressure was applied without results. In another case the atropine test had no effect on the ectopic rhythm.

SUMMARY.

1. Paroxysmal tachycardia of ventricular origin is a rare condition, occurring in only .047% of all abnormal electrocardiograms recorded in the Clinic.
2. Two cases revealed conduction impairment.
3. As an etiologic factor, history of infection with the streptococcus group was elicited in four cases.
4. The symptomatology in all cases was very uniform, palpitation, tachycardia and exertion dyspnea being complained of by all the patients. Vertigo attended the paroxysms in three cases.
5. The average pulse rate during the paroxysms was 174.
6. One case coming to necropsy revealed distinct atheroma of the left coronary artery, which is very significant.

7. As life is dependent on ventricular, and not on auricular action, this condition must be considered potentially grave.

8. Digitalis medication in two cases treated did not affect the abnormal rhythm.

CASE 1 (70066). A male, 62 years of age, came to the Clinic June 28, 1915. Five-year history of paroxysms of rapid pulse and palpitation. This case not only presents coupled heterogenetic ventricular contraction and short paroxysms of ventricular tachycardia, but also impaired conduction through the junctional tissues, the pulse rate interval being 0.25 seconds. There is hypertrophy of the left ventricle. The sinus rate is 86; the ventricular tachycardia rate is 150. (Plates I and II.)

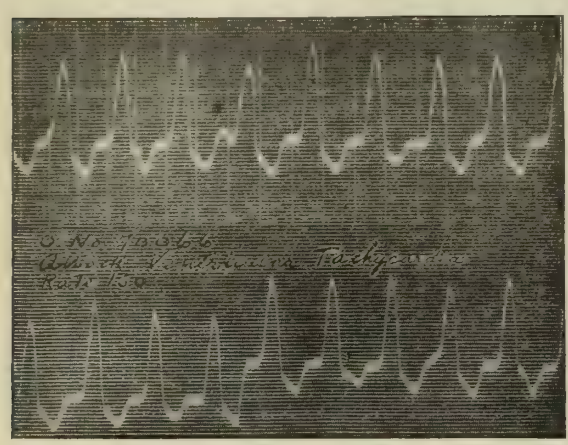


PLATE I.—No. 70,066. June 28, 1915. Leads I and III. Rate 150.

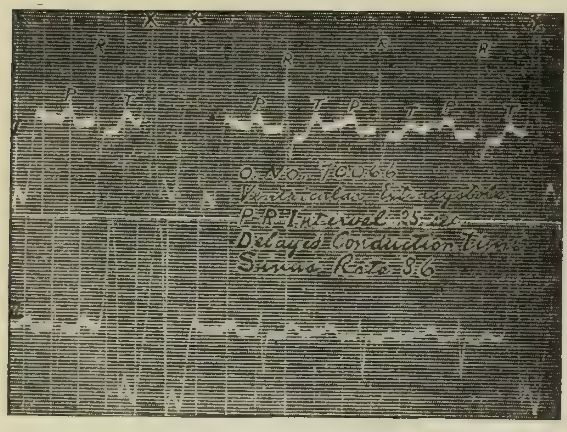


PLATE II.—No. 70,066. Aug. 31, 1915. Leads I and III. Sinus rate 86.

CASE 2 (185935). A female, 21 years of age, came to the Clinic Feb. 17, 1917. Three-year history of palpitation and tachycardia. Ventricular tachycardia. Rate, 120. In this instance the auricular complexes are evident and have the same rate as the ventricular. There is marked hypertrophy of the left ventricle. (Plate III.)

CASE 3 (194798). A male, 42 years of age, came to the Clinic May 5, 1917. Two-year history of spells of palpitation and tachycardia. Electrocardiograms show short paroxysms of ventricular tachycardia with intervening sinus rhythm. (Plates IV, V and VI.)

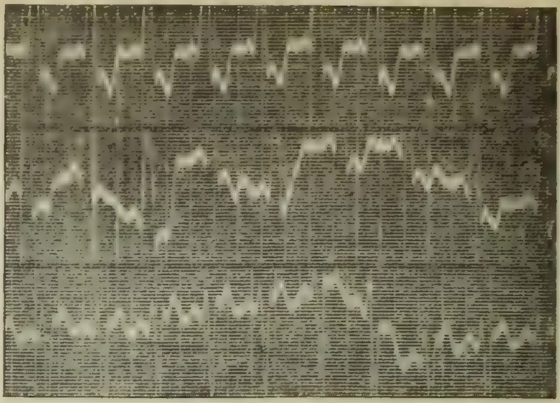


PLATE III.—No. 185,935. Feb. 19, 1917. Leads I, II, and III. Tachycardia rate 120.

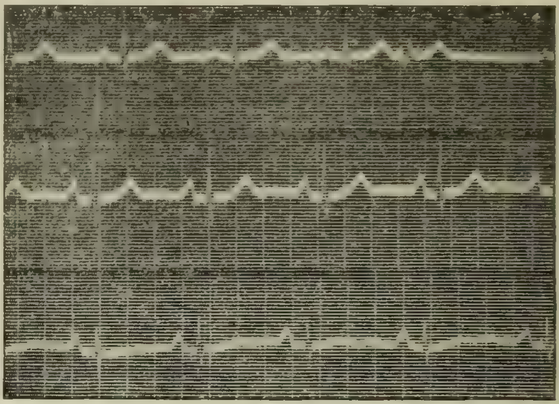


PLATE IV.—No. 194,798. June 13, 1917. 9.00 A.M. Leads I, II, and III. Rate 71. Ventricular premature contractions.

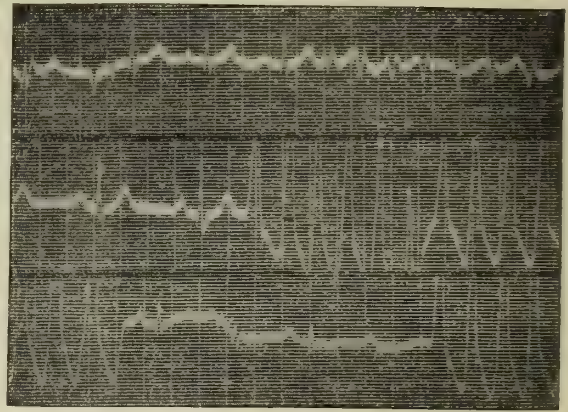
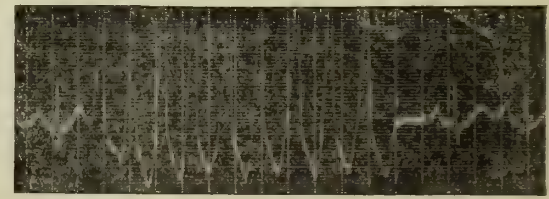
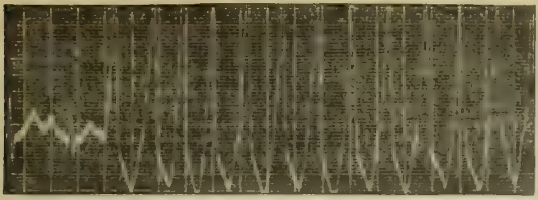


PLATE V.—No. 194,798. June 13, 1917, 3.45 P.M. Leads I, II, and III. Sinus rate 80 to 109. Short paroxysms of ventricular tachycardia rate 223 to 267.



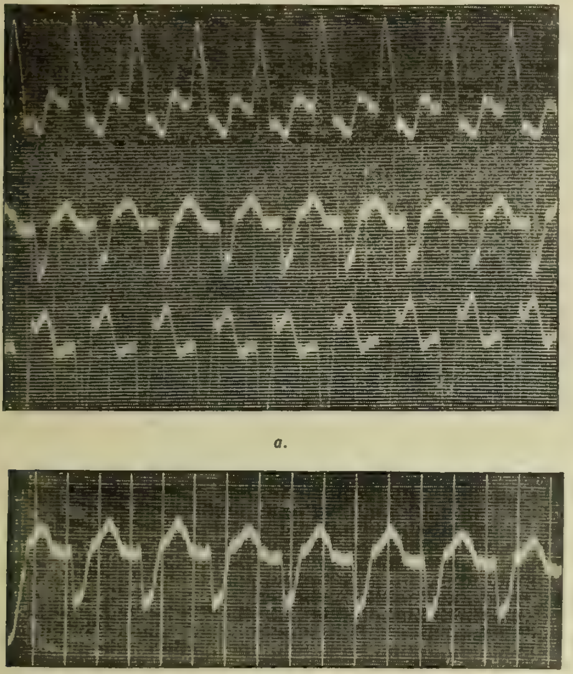
a.



b.

Plate VI.—(*a*) No. 194,798. June 13, 1917. Lead II. Sinus rate 100. Tachycardia rate 200. (*b*) No. 194,798. June 14, 1917. Lead II. Rate 220.

Case 4 (200751). A female, 44 years of age, came to the Clinic July 11, 1917. Six-week history of palpitation and tachycardia. Ventricular tachycardia with rates varying from 120 to 125. At times the auricular complexes can be identified. This case presents evidence of arborization block. (Plate VII.)

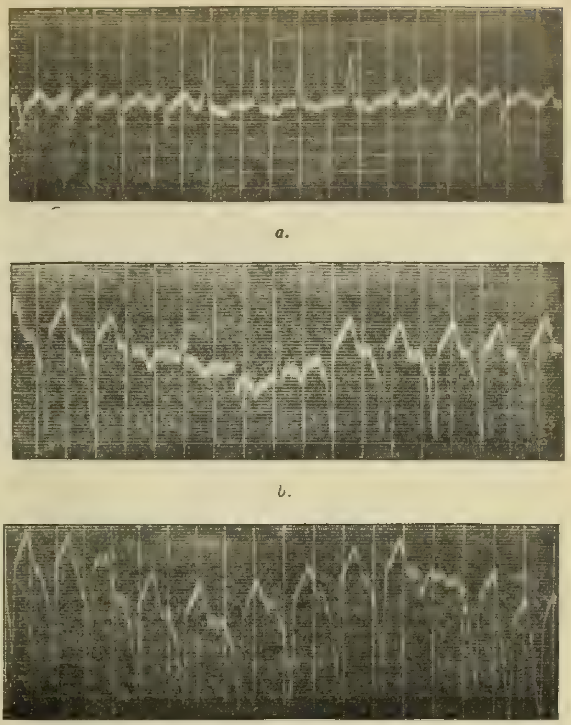


a.

b.

Plate VII.—(*a*) No. 200,751. July 14, 1917. Leads I, II, and III. Rate 120 to 125. (*b*) No. 200,751. July 15, 1917. Lead II. Rate 125.

Case 5 (98618). A male, 38 years of age, came to the Clinic July 25, 1917. Twenty-six-year history of paroxysms of palpitation and tachycardia, increasing in frequency and duration. This case presents several interesting features. Occasional complexes are seen, arising probably in the junctional tissues. There is a constant difference in the general appearance of Lead II from all the other cases, and probably can be explained by the point of origin of the ectopic impulses. They arise from the basal portion of the left ventricle and from the direction of the heart's axis; Lead II transects chiefly the "action currents" of the right heart. See Plate X. The lines x-y represent the transecting planes (Leads) by which the lines of force (action currents) are cut. Plate XII shows the failure of vagus pressure to affect the tachycardia. A marked arrhythmia is present at times, and probably signifies variation in velocity of impulse discharge. (Plates VIII, IX, X, XI and XII.)



a.

b.

c.

Plate VIII.—(*a*) No. 98,618. July 25, 1917. Lead II. Rate 172. Occasional nodal complexes. (*b*) No. 98,618. July 25, 1917. Rate 172. (*c*) No. 98,618. July 25, 1917. Lead III. Rate 172.

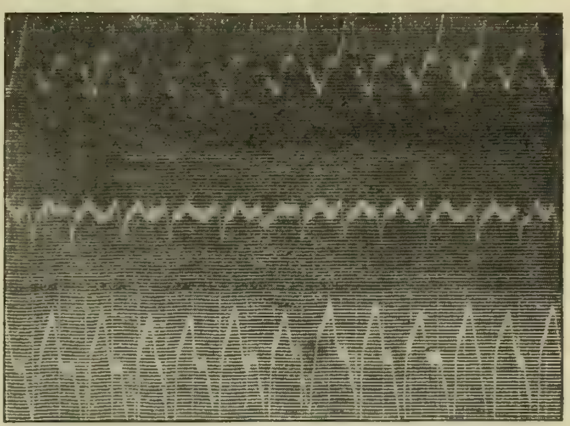


Plate. IX.—No. 98,618. July 26, 1917. Leads I, II, and III. Rate 169 to 180.

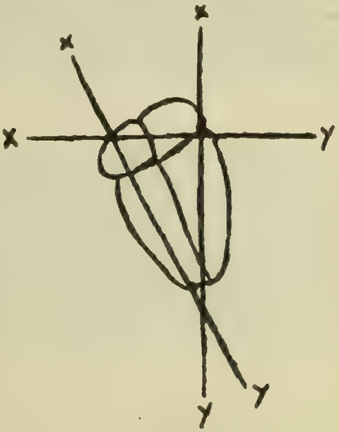


Plate X.

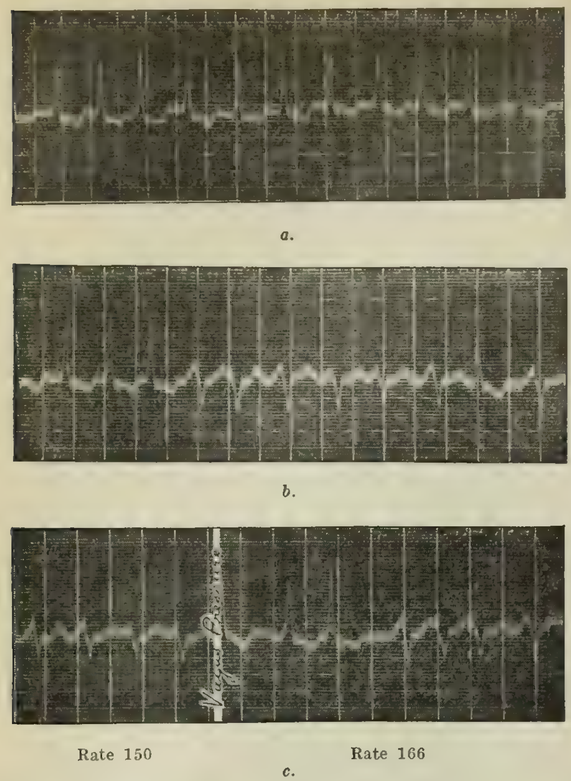


Plate XI.—(*a*) No. 98,618. July 28, 1917. Lead II. Rate 150. Nodal tachycardia. (*b*) No. 98,618. July 28, 1917. Lead II. Rate 175. Nodal and ventricular tachycardia. (*c*) No. 98,618. July 28, 1917. Lead II. Failure of vagus pressure.

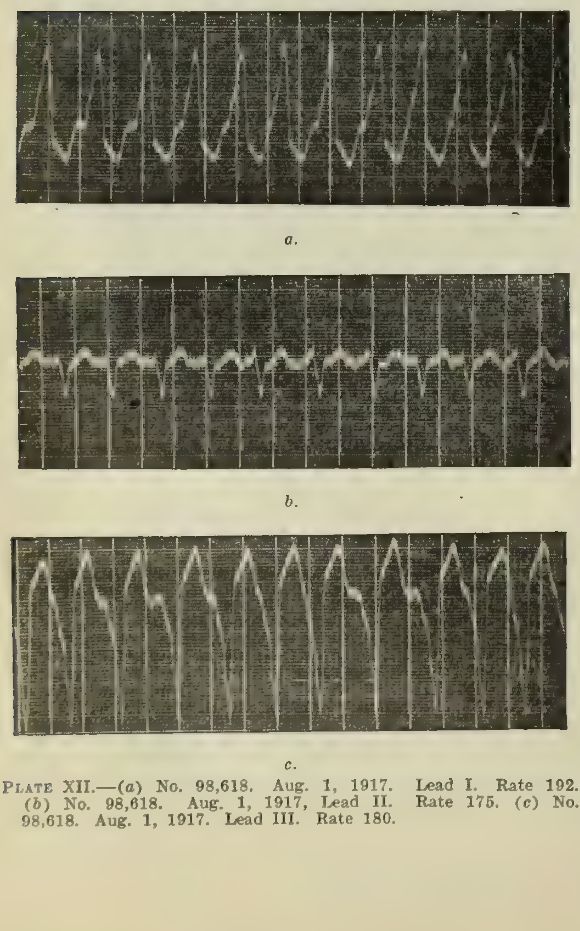


Plate XII.—(*a*) No. 98,618. Aug. 1, 1917. Lead I. Rate 192. (*b*) No. 98,618. Aug. 1, 1917, Lead II. Rate 175. (*c*) No. 98,618. Aug. 1, 1917. Lead III. Rate 180.

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THE RECOGNITION OF SURGICAL KIDNEY*.

By Benjamin Tenney, M.D., F.A.C.S., Boston.

Surgical kidneys are those whose symptoms can be relieved or cured by mechanical means. With some pathological conditions which fit into this group there may be a pre-surgical state where the fortunate physician may favorably influence the course of the disease. As yet we know less of the early symptoms of renal lithiasis, tuberculosis, and cancer than we desire. Of untreated surgical kidneys we have full knowledge from the autopsy table.

Some of the symptoms characteristic of surgical disease in the upper urinary tract are found with certain bladder conditions, and are also present when the real pathology is outside the urinary tract. They are often so concealed by misleading descriptions and contradictory symptoms on the patient's part, and by the vague and misleading names which are a part of our mental furniture, that we are easily persuaded to put them in the wrong pigeon-hole and label them pelvic, or orthopedic, or digestive, or even nervous, when they belong to the urinary department.

The separation of pathological lesions into things medical and things surgical is simpler than the proper sorting of the living men and women who bear this pathology. All agree that urinary stone is a surgical condition and usually operative. The same is true of cancer of the kidney and large hydronephrosis. All genito-urinary men, most general surgeons, and the majority of good medical men agree that renal tuberculosis is a surgical and operative disease.

There is less agreement about the type of renal disease characterized by pyuria, unilateral discomfort, and abnormal frequency, commonly called pyelitis, because this type is subject to periods of activity and of freedom from symptoms following any treatment by mouth, or no treatment whatever, and the last drug given before the quiet period gets the credit of a cure. Then, too, there is seldom any striking pathology that can be seen and handled after the cure or death of these cases. Patients with these symptoms are usually on their feet and often unwilling to allow for the period of study which is sometimes needed to establish this cause.

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* Read before the Lawrence Medical Society, April, 1917.

The symptoms which may reasonably turn our attention to the urinary tract are:

Frequent urination, which is real when the regular daily intervals are two hours or less or when there are two or more night urinations;

Blood, or pus, or both, in the bladder urine;

Urgency or incontinence;

Tenesmus after urination.

If with these we have recurring pain or discomfort in one loin or in one side of the back, we may suspect some trouble above the bladder. Variable temperature and loss of weight are suggestive additions, as is the presence of albumen in the urine. Albuminuria has been mentioned last because it is of minor importance in the diagnosis of surgical disease of the urinary tract, sometimes overlooked in the usual tests and usually varying in proportion to the amount of blood and pus in the urine.

Frequency is the relation of the working capacity of the bladder to the kidney excretion. Two ounces per hour is the expected excretion of the kidneys. If the total capacity of the bladder is four ounces, it must be emptied every two hours, and if less, more frequently. If the total capacity is twelve ounces and there is a constant residual of eight ounces, there is a working capacity of four ounces and a urinary frequency of two hours. When the bladder has a working capacity of sixteen ounces it is probably within normal limits and will retain urine for the eight hours of sleep and comfortably through the day unless the sphincter has been injured.

Any condition which increases the pull of the ureter or causes pressure on the outside of the bladder, like a pelvic tumor, will diminish the working capacity more or less according to the posture and activity of the body. Frequent urination is not a signal for operation, but it is a warning of more symptoms to come.

The presence of blood or pus, or both, in the bladder urine is most important, but the exact location of the bleeding or suppurating area is sometimes difficult to find. Blood and pus, even in microscopic amounts, are not normal in the bladder urine and always mean some pathological condition. The presence of either is a more serious symptom than moderate frequency, and the three combined more serious yet. The probability of finding stones, tuberculosis, or new growth increases with the length of time this combination exists.

Incontinence, without the strong bladder contraction which we call urgency, seems to imply a weak sphincter from some injury or disease. This type of incontinence produces leakage with sneezing, coughing, and sudden jars without the previous sensation of desire to urinate. Urgency is the imperative desire to empty the bladder, produced by a powerful contraction of the bladder muscle, which will easily overcome an injured sphincter and may cause leakage through a sound one. Urgency seems to be associated with irritation of the bladder trigone or of the lower ureteral fibers. Tenesmus is a further exaggeration of urgency, continuing after the bladder is nearly emptied of fluid. It amounts to a cramp of the bladder muscle and is not rarely seen when examining a bladder through a cystoscope.

Pain in the back is commonly regarded by the public as a symptom of disease in the kidney. As a matter of fact, kidney diseases are painless unless there be obstruction to the flow of urine. Unilateral pain is a symptom of stone when the stone blocks the ureter, of tuberculosis and cancer when a clot is passing down, or intermittent hydronephrosis when the ureter is kinked, and of the acute infections when there are multiple retentions of urine within the kidney substance.

Variable temperature is often seen. In acute renal infection it may run very high and in old infection it may be persistently subnormal though variable. I have seen this several times, and have one chart kept by a careful patient for six weeks where the variations cover four degrees between morning and night, and the temperature did not rise above ninety at any time. A varying temperature may complicate the diagnosis. Loss of weight in renal disease of the surgical type corresponds with pain and loss of sleep, with accompanying lack of appetite. It is not essential to diagnosis and usually appears late. While these findings are essential to diagnosis of surgical disease above the bladder they are not the only ones demanded. Cystoscopy, study of the separate excretion of the kidneys by microscope and color test, guinea-pig inoculation, and x-ray examination may all be required before the diagnosis can be perfected. The conditions under which these symptoms may develop are pyelitis, hydronephrosis, stone, tuberculosis, and cancer of the kidney. To these we may add pyonephrosis and acute hemorrhagic nephritis. Most of these conditions are associated with infection, and the cause and path of the infection are important.

One function of the kidney upon which too little emphasis has been placed, in our earlier teaching, is the excretion of living and dead bacteria from the blood stream. When the equilibrium between the intake and increase of bacteria, and their excretion and destruction, is upset by failure of any of the excreting and destructive systems we have health failure.

The kidney system, to work perfectly, requires free blood supply and exit, and a free channel for the urine. So far as known, the arterial supply is always adequate. No work has been done on the results of partial compression of the renal vein so far as I know. The relation between the right renal vessels and the foramen of Winslow is so close that inflammatory enlargement or adhesions around the lower bile duct may compress these vessels. The vein being less resistant will yield more to pressure, and by producing a passive hyperemia in the kidney may disturb its function somewhat. This is only a suggestion, not a conclusion.

We do know clinically and by numerous animal experiments that tying off the ureter is followed by marked dilatation on the venous side of the kidney circulation and slowing of the blood stream. If active bacteria are present in this blood we get a septic thrombus whose future history depends on many unknown factors. It may become the calcified nucleus of a stone, the beginning of a pyonephrosis, or disappear.

With intermittent obstruction of the ureter we may assume a lesser degree of the same anatomical changes, and the bacteria, white and red blood cells, and some round cells from the fighting area give us the sediment picture of what we call pyelitis. If the bacteria are of a virulent type we may get a more acute general reaction, with high temperature, acute pain, prostration, and a sediment showing leakage into the urinary tubules—the acute hemorrhagic nephritis.

The word "hydronephrosis" is now applied to all cases where pain is caused by the retention of urine in the pelvis. A half-ounce may produce severe pain in one individual when another may carry a pint or more and continue work. Much of our knowledge of these smaller hydronephroses is due to their study by x-ray plates with opaque fluids in the pelvis. A symptom suggesting this diagnosis is the absence of one-sided kidney pain after lying down and its reappearance a half-hour to an hour after rising. Many hydronephrotic kidneys drain well when horizontal, but when the owner stands or sits the ureter is kinked, and pain comes on when the kidney has secreted enough urine to distend the pelvis. This symptom is more common than repeated urination after lying down.

Stone in the kidney causes pain only as it blocks the flow of urine, and stone in the ureter causes reflex irritation but not much pain unless it plugs it tightly. X-ray plates have shown many urinary stones that were unexpected and, unfortunately, have failed to show some that were present.

It is usually possible by some means to make a correct diagnosis in cases of renal and ureteral stone, though not always; but it is always possible to make the diagnosis of renal obstruction if such exists, and this is the condition for which the patient seeks relief.

Tuberculosis of the kidney is really not an uncommon disease and should be recognized earlier than it is. Its natural course varies much. I have known two patients to die within four years of the first recognized symptoms, and others whose symptoms could be traced back for six years before I saw them. Often the earliest sign which leads a patient to a doctor is a swollen epididymis which is itself infected from the stream of bacilli flowing through the prostatic urethra. Another will have albuminous urine and urinary frequency, another a hematuria, and another have recurring periods of acute bladder symptoms.

A correct and early diagnosis of renal tuberculosis is desirable, and possible except under two conditions. If the specimen of urine is obtained at a time when no bacilli are coming through, or if the tubercular kidney is blocked and excreting no urine, of course we get no bacilli. The guinea-pig test is more delicate than the microscopic examination of the sediment, but, if negative, should be repeated several times if the patient's condition suggests renal disease of this type. The smegma bacillus is the only similar one likely to contaminate a urine, and I do not always wait for the six weeks guinea-pig test when I can obtain the specimen of urine myself and the microscopic examination is positive.

A tubercular kidney is hopeless. There is no evidence from the autopsy table of recovery. Nature sometimes does a sort of nephrectomy by closing the ureter and thereby stopping excretion from this kidney. Apart from this possibility, tuberculosis of the kidney will kill its possessor as surely as cancer of the kidney and give him more misery on the way. It is as necessary to operate early for tuberculosis as for cancer; for late cases have such secondary changes in their bladders that much of their discomfort remains after the cause has been removed, while the comparatively early cases get entire relief from symptoms almost as soon as they waken from the operation. Early recognition and nephrectomy is the proper and only fair method of caring for these cases.

The recognition of surgical kidney is slower than it should be in every community. Too many physicians still treat patients for bladder symptoms without studying into the cause of these symptoms. If we remember that one function of the bladder is to serve as indicator of disease above and below it and that it is more frequently an indicator than a primarily diseased organ, we shall recognize our cases of renal tuberculosis, lithiasis, and all degrees of pyelitis and pyonephrosis more frequently and much earlier.

MEMBRANOUS CROUP.

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Epidemiologist, Board of Health.

From the standpoint of public health there are two reasons why the diagnosis of membranous croup should not be dismissed merely as an undesirable term and as such excluded from the International List of Causes of Death. As excluded or as undesirable when made, all such cases are included under diphtheria. The two reasons are not found in text-books on infectious diseases; the first is that by the recognition that not all so-called membranous croup cases are diphtheritic in origin, lives may be saved; secondly, that by such recognition workers in the health service have an opportunity of preventing other not unimportant illnesses.

During the early part of 1916 I showed that there were to be demonstrated sporadic cases of streptococcus laryngitis, simulating diphtheria where all the epidemiological factors for proof were obtainable.[1] Recently[2] I have shown that they may become an integral part of an epidemic, and that during such a period they gave rise to a not inconsiderable number of fatalities. I have also shown what is not yet a sufficiently well-recognized fact, namely, that not every case of obstructive laryngitis of measles, whether of onset or post-measles, is diphtheritic in origin. That such is the case may be shown by post-mortem examinations that are on record. The majority of all these cases during previous years and during the present time in institutions and among certain physicians were treated for diphtheria. The justification for death without further inquiry seems to have rested in the fact that throat cultures would not show the infecting organism of diphtheria when the lesion was primarily laryngeal in but a lesser proportion of cases, as well as the fact that laryngeal diphtheria was necessarily highly fatal, even when antitoxin was given early and in large amounts. Up to the time that I began to do field work in communicable diseases I personally taught the same, having been so taught during my service in the diphtheria wards of the Boston City Hospital. As a result, first, of investigation of the individual who may have caused the case; secondly, the findings of cultures, not that they were negative but what they showed positively, in conjunction with the fact that diphtheria did not follow such cases and their environs, but that illnesses consequent on what were apparently the positive findings of case, carrier and contacts did follow, was sufficient reason for investigation.

That lives may be saved has been proved to me by the following. Recognition of this so-called complication during measles as being purely streptococcal in a series of cases led me to advise immediate intubation with a further confirmatory diagnosis during that operation in the following manner. A skilled operator has determined by the feel that in a larger per cent. of cases the larynx is edematous only. Secondly, repeated cultures have always shown a streptococcus. Beyond diagnosis was a most gratifying experience that such cases did well, recovered without antitoxin and, after periods upwards of a year, have justified the diagnosis at least, by not having developed even palatal paralysis. There yet remains in my memory the case of one of two small sisters, both with measles, but one referred as a probable case of diphtheria. Practically moribund, the patient surprised even the operator by recovery after intubation. A similar series of cases treated by antitoxin and eventually intubated all died. During the past year a study of the laryngeal cases of suspected or of true diphtheria under age 5 showed the following: In 7 cases cultures sent to the laboratory showed K-L in 6 instances. In all instances there was demonstrated the carrier in the family. All recovered with moderate antitoxin doses and without intubation. The remaining instance was sent to the hospital without cultures,—previously a moribund case of primarily faucial diphtheria. In the latter instance the carrier was in another family in the same house. There were 13 other cases diagnosed as laryngeal diphtheria and 2 as membranous croup. Of the 13 cases, 4 had laboratory cultures showing a streptococcus, a demonstrable streptococcal carrier, and all recovered as cases of treated diphtheria. Of the remaining 9 cases, 7 cases died where epidemiological evidence showed that they were other than diphtheria. One was an infant, the secondary cause of death being given as pneumonia of the same duration as the diphtheria—2 days. In the family were two older children with purulent nasal discharges giving pure cultures of a Gram-positive diplococcus, one having had the discharge for some two weeks, while the second had had it less than one week. In 4 of the cases there was present in the family the nasal streptococcal carrier antedating the case and followed by streptococcal sore throats in other older children in the family in three of the cases. In the fourth instance there had been preceded first a sore throat complicated by laryngitis, then two succeeding laryngitides, to culminate in the final fatal case in the youngest member of the family. The only one of the children not ill was the nasal carrier. In 2 instances measles followed in the families, one case not fatal being later returned as that disease. In 1 instance we had to deal with spasmodic croup, and the final instance gave no data—previous, present or future. The two cases of membranous croup were also of the same class, having neither family, house nor neighborhood previous or later infections to explain them. Both were cases of sudden death at one year of age, probably having to do with status lymphaticus.

During this time I have seen 10 cases where assurance was given the physician, by cultures and by examination of the other children in the family, that the streptococcus was the etiological factor. Four of these were intubed. There were no fatalities.

Inasmuch as there was nothing more extraordinary about the 11 cases with 5 deaths in the first series as contrasted with the 10 cases and no deaths, there may have been a something extraordinary that the second class did have done for them. Therein I believe lies the possibility of saving lives. Instead of being given antitoxin and relying on that to relieve the condition they were treated with sedatives and vaporizations. In other words, knowing a case to be laryngeal diphtheria, we rely on antitoxin for combating toxicity and intube with the knowledge that only at a certain time is relief of obstruction necessary. The streptococcal infections are characterized by a much more rapid course. In waiting for the same degree of obstruction the case is more immediately lost. Earlier interference from a more acute edematous process with more constant medical treatment has apparently given absence of fatalities. It is so definitely so to me that I feel sure that a similar study of these negative culture cases of primary laryngitis if studied both sporadically as well as during grippe prevalence, when they may be truly epidemic, in metropolitan cities will aid in cutting down the death rate.

Recognition of these cases is secondly of the greatest importance from the public health standpoint in preventing further illnesses in the following manner. It being the custom of cities to culture all family contacts and diagnosing carriers from the cultures, it would be found that no carriers existed in the house or neighborhood should they seek further than the house. There would be free for future neighborhood and family contact these streptococcic nasal carriers. The secondary and return cases in families and in the neighborhood are varying grades of septic sore throat as well, and any connection with the previous case is not realized. Less frequently I have found that the bronchopneumonias of infants in the family follow the appearance of the carrier. I have previously shown that the streptococcal nasal carrier leaves behind him a train of victims of major and minor illnesses which is unbelievable until the detective finally trails him to his lair. There is no exaggeration in saying that Pandora's box was hardly a circumstance. The illnesses and debilities caused by such a carrier in contradistinction to a diphtheria carrier, extend beyond the field of contact of children. It is so common to find among the working members of the family coincident "malaria," "grippe," "sore throats" and obscure minor complaints that there is need of much more field work to show that they are not dependent on the same factor.

SUMMARY.

It is important to recognize that membranous croup may not be a primary laryngeal diphtheria; that it is probable that many cases treated as such would not be fatal cases were they so recognized and more rationally treated.

Recognition of sporadic and epidemic streptococcal laryngitis opens up a wide field in preventive public health work from appreciation of true carriers. This field apparently extends beyond the disabilities and illnesses of childhood and is worthy of examination as to its extent as a measure of health insurance for the wage-earners.

Though less frequent, similar study should be made of the pneumococcal type as offering analogous preventive measures and reduction of mortality.

"Croup" is as undesirable a term as "membranous croup." Equally pernicious, both should be so listed and the reader referred to "laryngitis," with the query as to what the infecting organism was.

REFERENCES.

[1] Streptococcal Infection Simulating Diphtheria. Boston Medical and Surgical Journal, June 8, 1916.
[2] The Modus Operaudi of Epidemics. Interstate Medical Journal, Vol. xxiv, No. 6.

* * *

SOME EFFECTS OF MASSAGE ON THE COLON.*

By Franklin W. White, M.D., Boston,

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Abdominal massage is a method freely advised and used in intestinal stasis both general and local. We have felt uncertain about the actual results obtained and wished to verify them by actual observation. Cannon's method of direct examination of the bowel with the röntgen ray was used in studying the human colon at intervals after vigorous abdominal massage (especially of the colon).

The persons examined were vigorous, and without any important disease of the digestive or other organs. They came with a well-filled colon about twenty-four hours after a barium meal, were massaged, and the colon watched at intervals with the röntgen ray and fluorescent screen to see what happened. Deep abdominal massage was given for five to twenty minutes, especially over the course of the colon, transversely, both to mash up the contents, and to push them along, if possible.

There was great variation in different persons in the accessibility of parts of the colon to massage. For example, we especially wished to empty the cecum "the human drain trap," but we found the cecum in all sorts of positions, from deep in the true pelvis (and entirely out of reach) or in the hollow of the ileum and easily accessible, to positions above the iliac crest with only a soft background. Unless one *knew* where the individual cecum was, much effort to massage it directly would be wasted. The transverse colon hung at quite different levels and the splenic flexure was often, and the hepatic flexure at times, well under the edge of the ribs and very hard to reach. The pelvic colon was practically inaccessible.

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* Read at the thirty-second Annual Meeting of the Association of American Physicians, Atlantic City, May 2, 1917.

We see difficulties for the patient in following Sahli's advice to perform auto massage with a cannon ball "along the probable course of the colon."

We found that vigorous abdominal massage usually mashed up the contents of the colon but had little or no immediate effect in moving the solid contents forward; Case[1] and Hertz[2] report similar results. This was true of massage of any sort whether transverse, or stripping along the course of the colon. Strong pressure will not move the contents of the ascending colon into the transverse colon or the contents of the transverse into the descending colon. The haustrae, by gripping the contents in many places, held it firmly.

If the colon is distended with gas a small lump of contents may occasionally be moved a short distance forward. If the abdominal walls are well relaxed and the bowel forcibly compressed with the fingers in a favorable place like the iliac fossa, where there is a firm background, a little movement may result. When a full cecum felt as if it were being emptied at once, it was found that gas had moved forward, and solid contents merely flattened out in both directions.

We found when the cecum was low, or below the brim of the pelvis, that massage often pushed the tip of the cecum still lower into the pelvis and pushed material further down into the cecum, filling it fuller than before. This is unfortunate as these are just the cases where mechanical help in emptying the cecum is most needed.

These results contrast sharply with the easy statements often found in text-books that "massage pushes along the contents of accessible portions of the stomach and bowel."

It is evident that any favorable effect of massage must be due to increasing the tone of the colon, not by directly squeezing its contents along.

In watching the later results of massage of the colon at intervals of several hours, it was found that massage sometimes delayed, but usually hastened, the passage of colon contents evidently by stimulation of slow peristalsis. For example we found that massage at 2 p. m. would quite often cause an extra stool at 8 or 9 p. m., in addition to the usual morning stool. The occasional delay after massage was probably due to muscular spasm.

The effect of massage was small in comparison with the stimulus of taking food. That is, the well-known forward movement in the colon after a meal was much greater than we could produce in the same time following vigorous massage of the colon.

A rapid onward "mass movement" of a large portion of colon contents was seen very rarely (twice) after massage. That is, a part of the colon suddenly loses its haustral markings, forming a sausage-shaped mass which travels rapidly from one part of the colon to another. These large movements had no direct relation to the force of massage; for example, deep massage in one case would give no result, and light palpation would cause a marked mass movement in another. The massage was not a mechanical stripping process, but the stimulus to a reflex mechanism.

SUMMARY.

Cannon's method of direct examination of the bowel with the röntgen ray was used in studying the human colon at intervals after giving abdominal massage (especially of the colon.)

There was great variation in different persons in the accessibility of parts of the colon to massage.

Vigorous massage usually mashed up the contents of the colon, but had little or no immediate effect in moving the contents forward. When a full cecum was apparently emptied at once, it was found that gas had moved forward and solid contents merely flattened out in both directions.

Massage sometimes delayed, but usually hastened the passage of colon contents at the end of several hours, evidently by stimulation of slow peristalsis. The effect of this stimulus was small in comparison with the stimulus of taking food.

A rapid onward "mass movement" of a large portion of colon contents was seen very rarely (twice) after massage. These large movements had no direct relation to the force of massage, but followed gentle palpation.

Prompt emptying of any part of the colon by massage is a fallacy. This is especially true of the low cecum, which is usually inaccessible and is often pushed lower and filled fuller than before. The good effects of massage are found in a mashing up of the intestinal contents and a stimulation of muscular tone and slow peristalsis, which usually drive the contents slowly forward for several hours.

I wish to acknowledge my indebtedness to Prof. Walter B. Cannon of Boston for valuable help and suggestions.

REFERENCES.

[1] Case: Journal of the Iowa State Med. Soc., vi, 1916.
[2] Hertz: Constipation and Allied Intestinal Disorders, London, 1909.

LIPOIDS IN 131 DIABETIC BLOODS.

By Horace Gray, Boston.

[From the Department of Biological Chemistry, Harvard Medical School.]

(Continued from page 20.)

Analysis of the readings on 204 consecutive cholesterol extracts shows:

1. That my left eye was more accurate than my right. For, whereas 66% of these readings happened to be done with the left eye, Table III shows that when the first two readings did not differ by more than 0.2 mm., the left eye was responsible for 71% of these. This greater accuracy is presumably due to (*i*) its more frequent use at the microscope (to allow simultaneous drawings with the right hand), just as the greater acuity of the modern left ear is due to its monopoly at the telephone; or (*ii*) left-eyedness of even longer standing, *i.e.*, a natural individual characteristic. This dominance of one eye has been independently discussed by Callan, Rider and especially interestingly by Gould.

Callan, P. N.: "Are We Right Sighted?", Medical Record, April 2, 1881, xix, 390.
Rider, W.: Unilateral Winking as a Test of Comparative Visual Acuity, Trans. Am. Ophth. Soc., 1898, 434-452.
Gould, G. M.: Righthandedness and Lefthandedness, Lippincott, Phila., 1908, *passim.*

Each reading in the colorimeter was made in this way. The fields were quickly matched during about 10 seconds; the eye was then closed for a like interval, and the fields were again adjusted; a second pause, a third setting. This process was always repeated once. If the second reading varied by more than 0.2 mm., a third or even a fourth was made, and on a bad day when the readings were variable, even a fifth reading.

Table III.

Left Eye More Accurate than Right.

	No. of Readings Per Extract Necessary to Get Figures in Close Agreement. 1st=2d	Average of 2*	3	4	5
No. extracts in each group..	47	82	21	43	11
Per cent. of these done with left eye	74%	70%	57%	58%	54%
	71%		57%		

* *i. e.* 0.2 mm. difference.

2. That the accuracy was essentially the same whether the reading fell within 1 mm. of 15 (standard), or within 2 or 3 or 4 or 5± mm. The groups are compressed, as in the last horizontal line of the previous table.

That is to say, it is just as easy to read specimens which are 33% stronger or weaker than standard as it is to read them when they are almost the same concentration.

Table IV.

Equal Accuracy of Reading when Unknown is Anywhere between 1-3 Stronger and 1-3 Weaker than Standard.

	1=2	Average of 2 3 4 5
within 1 mm. ±	67%	33%
1-2	58%	42%
2-3	64%	36%
3-4	75%	25%
4-5	68%	32%

Several authors have discussed the yellowish or brownish tint of the:

1. Chloroform extract.
2. Unknown field in the colorimeter.

Mueller, J. H.: A Comparison of the Results Obtained by Colorimetric and Gravimetric Determinations of Cholesterol, Jour. Biol. Chem., 1916, xxv, 549.
Weston, P. G.: Colorimetric Methods for Determining Serum Cholesterol, Jour. Biol. Chem., 1916-17, xxviii, 383.
Bloor, W. R.: The Determination of Cholesterol in Blood, Jour. Biol. Chem., April, 1917, xxix, 437-445.
Luden, G.: Studies on Cholesterol. III. The Influence of Bile Derivatives in Bloor's Cholesterol Determination, *ibid,* 463-476.

The former I have noticed only seldom, and only after heating past dryness, as the original description states. The latter occurred in perhaps a third of the determinations, *i.e.*, less than Luden found and far less than Mueller. It was so slight that I seldom gave it two thoughts and frequently got two consecutive readings identical, or only 0.1 mm. apart. It must be granted that this does not prove that these readings were at the correct level. In the rare instances when the brown was marked, whether in extract or field, the determination was repeated.

TIME REQUIRED FOR THE VARIOUS METHODS.

After some practice it was found possible to do determinations at about this rate:

Table V.

Speed.

Method	No. Determinations per 8-hr. Day	Ave. No. Minutes for Each
Bloor's Fat (total-fat)	24	20
Cholesterol	16	30
Lecithin	12	40

It must be noted, however, that:

1. The oleic acid and cholesterol being in volatile solvents should be made up in small quantities, which means frequent repetition.

2. Alcohol, ether, and often acetic anhydride need redistilling.

3. The manufacture of the sodium molybdate, and from it of the strychnine molybdate, is troublesome at best; when made it not infre-

quently is useless, and always is unstable, and therefore must be made up often.

4. Pickling the whole blood, or centrifuging and then pickling the plasma, uses up more time than would be expected; this is also true of:
5. Washing beakers.

Suppose the aggregate of these procedures to require as much time as the actual determinations, then in a day a fair worker can do about 12 total-fats, 8 cholesterols, or 6 lecithins. A single determination of course requires much longer than the average time tabulated; but it may be stated that for a critical case 3 cc. of blood could be taken from the patient and the total-fat analysis finished in 1½ hours, longer to be sure than blood-sugar, but I believe more significant.

FORMULAE.

The *determined* values, in g. per 100 cc., often called %, may be found from the following formulae:

Bloor's Fat-Method. When using 3 cc. of blood pickled in 100 cc. alcohol-ether, and of that extract 10 cc., and supposing 5 cc. of standard solution as made up contains 2.3 mg. oleic acid and is set at 20 mm.:

$$\frac{\text{Reading of standard}}{\text{Reading of unknown}} \times \frac{2.3}{3} \times \frac{100}{10} \times \frac{100}{1000}\ i.e.\ \frac{20}{\text{Ru}} \times \frac{2.3}{3}\ i.e.\ \frac{115}{\text{Ru}}$$

Lecithin. When using 15 cc. of the same extract, and when 5 cc. of the standard contains 0.15 mg. H_3PO_4 and is set at 20 mm.:

$$\frac{20}{\text{Ru}} \times \frac{0.15}{3} \times \frac{8}{15},\ i.e.\ \frac{534}{\text{Ru}}$$

Cholesterol, when using 10 cc. extract, and a standard containing 0.5 mg. set at 15 mm.:

$$\frac{15}{\text{Ru}} \times \frac{0.5}{3},\ i.e.\ \frac{25}{\text{Ru}}$$

The *calculated* values may be found from these formulae:

Total Fatty Acids.

W. B.: Total-fat in W.B. minus cholesterol in W.B.

Pl.: Total-fat in plasma minus cholesterol in pl.

Corps.:

$$\frac{(100 \times \text{T.F.A. in W.B.}) - (\%\ \text{pl. in blood} \times \text{T.F.A. in pl.})}{\%\ \text{corpuscles in blood}}$$

Lec. and *Chol.* in cps. are estimated by a formula similar to the last.

Glycerides.

Pl: T. F. A. — (.7 × L), — (.4 × chol.); result × 1.05
Cps: " " " , ……………………, " " "

Ratios are found by simple division.

Total Lipoids in Pl. (Total-ether-soluble or total-fat of other investigators): is the value often given by earlier workers, and for comparison is, therefore, here calculated:

Lecithin in plasma + 1.4 × cholesterol in plasma + glycerides in plasma:

The reason for 1.4 rather than simply 1 is that the extra 0.4 × C represents the fatty acid combined with cholesterol. Assuming that the principal ester is cholesterol-oleate, the theory for the factor is:

Oleic acid …………	$C_{18}H_{34}O_2$	M.W. 282
Cholesterol ………	$C_{27}H_{45}OH$	M.W. 386

Mauthner and Suida, cit. by Mathews, A. P.: Physiological Chemistry, New York, Wood, 1915, p. 85.

Now these combine in proportion to their molecular weights:

$$\frac{\text{Fatty acids (oleic)}}{\text{Cholesterol}} = \frac{282}{386}$$

Cholesterol as ester = 0.55 (*cf.* Table VI × total-cholesterol (usual cholesterol determination, and therefore called simply "cholesterol" throughout this paper).

Fatty acid combined as cholesterol ester =

$$\frac{282}{386} \times 0.55 \times \text{Chol.} = 0.40 \times \text{cholesterol}$$

Table VI.

Per Cent. of Total-cholesterol Occurring as Ester.

Original Figures Are Here Compiled into One Average for Both Sexes	Whole Blood		Plasma	
	No. of Spec.	Av. %	No. of Spec.	Ave. %
Normal …………	11	34	26	58
Diabetic …………	7	47	18	55

Bloor, W. R., and Knudson, A.: Jour. Biol. Chem., February, 1917, xxix, 7.

Although it has been necessary to omit the Table of Basal Figures to which the following notes pertain, their retention has seemed of possible value:

CHECKS.

I. As a check, the lecithin in the corpuscles has been multiplied by 0.70, giving the theoretical amount of fatty acid in the corpuscles combined with the phosphatides alone. The value for the total fatty acids in the corpuscles should, of course, cover this, in fact theoretically should cover also the fatty acid combined in the glycerides. No attempt has been made to consider the latter, but when the quotient (0.7× lecithin in the corpuscles) is too large, the procedure has been either to

1. Do a duplicate determination, marked D, or to
2. Correct, C, by plus or minus 3% (which is roughly the limit of error) any or all of the 6 *determined* values. The least inconvenient way of doing this has seemed to take one, or if necsary more, of the following 3 steps:

1. Total-Fat: Increase value in whole blood and decrease in plasma.
2. Cholesterol: Decrease value in whole blood and increase in plasma.
3. Lecithin: Decrease value in whole blood and increase in plasma.

If even then the total fatty acid in the corpuscles is not larger than 0.7 × lecithin in the corpuscles, then we can only say that all possible corrections have been made, but without obtaining the values which we should expect. These deficiencies have been marked "!" Some of the factors responsible may be:

1. That the values in question are calculated.
2. Low percentage of corpuscles in the patient's blood.
3. High total-fat values.
4. The small amount of glycerides ordinarily present in corpuscles.
5. That in the nephelometric part of the total-fat method cholesterol may read differently from fatty-acid.
6. Lecithin may possibly in some instances be combined with one molecule of fatty acid instead of two.

II. Whether values for the various lipoids are always higher in plasma than in corpuscles is a point of some interest. An invariable rule would be a second convenient check on one's accuracy. A rule may be stated as follows:

Total-Fat: In whole blood (*i.e.*, corpuscles) less than plasma.

Cholesterol: In whole blood less than plasma.

Lecithin: In whole blood more than plasma.

Unfortunately there are exceptions, *i.e.*, the reverse being true, as listed in Table VII. In each of the three methods several pairs of whole blood and plasma have been duplicated, in order to make certain that the exception was not accidental. This possibility is suggested by the obvious fact that many of the pairs of values are so near alike that they could be moulded Procrustean-like to the rule by correcting within the limit of error.

TABLE VII.

CHECK II.

	TOTAL-FAT	CHOL.	LEC.
No. of exceptions	5	19	27
No. of determinations	116	116	114
Frequency of exceptions in per cent. of determinations	4%	16%	24%

From Table VII the rule appears of value as a check only on the total-fat method, with which only 4% of determinations break the rule. In 116 cholesterols there were 19 exceptions, *i.e.*, W.B. greater than plasma; a marked contrast to Henes' finding of no exceptions in more than 100 cases.

Henes, E.: Proc. N. Y. Path. Soc., December, 1913, N. S. xiii, 155-170.

The physician will say, Cannot these six determinations be reduced to one, *i.e.*, using only one of the three methods on either whole blood *or* plasma?

WHOLE BLOOD OR PLASMA, WHICH?

The former seems to me the better.

The considerations are given in Table VIII.

TABLE VIII.

WHOLE BLOOD *vs.* PLASMA.

	WHOLE BLOOD	PLASMA OR SERUM
Custom in blood analysis	Blood sugar Non-protein-nitrogen Urea-N Uric acid Ammonia-N Creatinin Acetone R p H Chlorides	Wassermann fixation CO_2 R p H Chlorides
Blood needed, c.c.	3	6+
More apparatus		Centrifuge 3800 R.P.M.
More time, minutes		15+
Completeness of extraction of lipoids	At most, only slightly less than from plasma	
Extent of variation	Less, because corps. change relatively less than plasma in lipoid content	Greater

TOTAL-FAT, CHOLESTEROL, OR LECITHIN—WHICH?

What one method, the clinician will ask, is the most practical? Certainly not lecithin, because:

1. Its simplicity is least of the three methods.
2. Its speed is least of the three methods.
3. Its significance is least of the three methods, inasmuch as the diabetic values rise least above the normal average.

Of the other two methods the "total-fat" seems to me the better, principally because:

1. Its speed (in my hands at least) is greater.
2. Its threshold between normal and diabetic is moderately definite.
3. Its diabetic rise above the normal average is greater, thereby giving the largest scale by which to judge degree of the lipemia.
4. It represents 91% of the total lipoids, alike in the 3 clinical groupings of mild, moderate, severe. The lowest per cent. was 88, in the moderate and also the severe groups; the highest 96, in the mild group.

All the considerations are given in Table IX.

Table IX.

Choice of Method: Total-fat, Cholesterol, or Lecithin.

	Total-Fat	Cholesterol	Lecithin
Instrument			
Name	Nephelometer	Colorimeter	Nephelometer
Accessibility	=	=	=
Familiarity		+	
Ease of Use		+	
Method			
Simplicity	=	=	Less
Speed: samples of extract per 8-hour day.	24	16	12
Accuracy: % variation ± from mean	4.5	3.5	3.6
Accuracy: No. of samples duplicated	118	66	60
Expense	Bloor Conversion Attachment $6	Acetic Anhydride more than $2 a lb. Chloroform more than $1 a lb.	
Specificity: no. of substances determined	2	1	1
Resulting Values			
Familiarity		+	
Diabetic threshold	+		
Diabetic max. / Normal aver. in W. B.	16	7	3
Diabetic max. / Normal aver. in Pl.	25	10	5
% of total lipoids	91		

THRESHOLD.

A border line between normal and diabetic values is worth establishing, even approximately. That it can be absolutely defined is unlikely both *a priori* and also judging by the attempts that have been made to set a sharp line for blood sugar.

A threshold may be looked for as the level of a substance in the blood above which it either:

1. Signifies excess over physiological normal variation,
2. Goes further and is excreted by the kidney.

BLOOD GLUCOSE PER CENT.

The blood-sugar threshold, for instance, by criterion 1, hyperglycemia, is at the present time regarded as about 0.11%. That this value is only approximate is evident from the variations in Table X, which may be due to:

1. The variety of methods employed, both for removal of proteins and for estimating sugar. In general, as Rolly and Oppermann have pointed out, those methods which determine blood sugar by reduction generally give lower values than those which analyze it colorimetrically.
2. The use of *plasma* by a few investigators.
3. The occasional fixing by an author of a normal "maximum," while he publishes simultaneously a still *higher* value in what he calls a normal person. The latter figure has been preferred in compiling the table.

Table X.

Blood Sugar Normal Maximum.

Seegen	0.194	1900
Frank	0.165	1910
Taylor and Hulton	0.150	1915
Strouse	0.140	1915
Schumm and Hegler	0.130	?
Michaelis	0.130	1914
Schirokauer	0.120	1912
Freund and Marchand	0.120	1913
Foster	0.120	1915
Gettler and Baker	0.120	1916
Gradwohl and Blaivas	0.120	1917
Cummings and Piness	0.120	1917
Jacobsen	0.116	1913
Purjesz	0.112	1913
Klemperer	0.110	?
Leire	0.110	?
Bang	0.110	1913
Kowarsky	0.110	1913
Lewis and Benedict	0.110	1915
Joslin	0.110	1917
Epstein and Aschner	0.109	1916
Liefmann and Stern	0.105	1906
Naunyn	0.100	1906
Hopkins	0.100	1915
Hollinger	0.096	1907
Rolly and Oppermann	0.088	1912

Seegen, J.: Die Zuckerbildung im Thierkörper, 1900, Berlin, 105.

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The blood-sugar threshold by criterion 2, the usual one of renal permeability or glycosuria, has been given as 0.14%,[1] or 0.149 to 0.164%,[2] or even as high as "rather accurately between 0.17 and 0.18%."[3]

Whatever may be accepted as the permeability threshold in normals, unfortunately in diabetes this will often fail us, owing to the peculiar but not infrequent renal block, *i.e.*, values as high as 0.28%,[4] or 0.40,[5], or even 0.50%,[6] and still no glycosuria.

BLOOD LIPOIDS PER CENT.

A lipoid threshold has not been sought by criterion 2, lipuria, because of the scarcity of figures on urinary lipoids. From the hyperlipemia viewpoint, however, I was much interested to see that in Bloor's figures the only places where the lowest diabetic value remained higher than the highest normal were in the total fatty acid in whole blood and plasma for his series of 20 men. In these two columns, furthermore, the threshold was as beautiful as could be wished.

TABLE XI.

LIPOID THRESHOLD SUGGESTED BY BLOOR'S FIGURES.

	TOTAL FATTY ACID	
	WHOLE BLOOD	PLASMA
Lowest diabetic value	0.41	0.46
Highest normal value (men)	0.41	0.43

This observation is essentially supported by the series here presented in Table XII. As might be expected from the fact that this series is three times as large, the threshold is less absolute, *i.e.*, there is some overlapping in every column. As in Table XII, the most distinct division is in the total fatty acid in the plasma, where there is the minimum both of:

1. Overlap, and of
2. Exceptions, *i.e.*, diabetics below the threshold.

The next most distinct, again as in Table XII, is in total fatty acid in the whole blood.

From both these tables, therefore, total fatty acid in the plasma is the *nearest* determination; but the most *practical* in my opinion is the "total-fat" in whole blood because:

1. Total-fat is a single determination, while total-fatty-acid requires two determinations and a calculation.
2. Though the extent of the overlap in any case may be greater with total-fat than total-fatty-acid, still these overlap cases are rare.
3. Though the number of the overlap cases occurring in 124 specimens is greater with total-fat in whole blood than total-fatty-acid in plasma, 7% vs. 4%, the difference is not great enough to outweigh other advantages stated in 1. Incidentally, this low number of exceptions, 4%, may be emphasized as showing what a small proportion of diabetics have normal blood lipoids.
4. The total-fat threshold in whole blood is preferable to that in plasma since fewer diabetics fall below it, and also because of the greater simplicity of using whole blood, as mentioned elsewhere.

Accordingly, the threshold suggested, *i.e.*, by Bloor's fat-method on whole blood, would be the highest value reported by that method. It is at present 0.67% in the same investigator's series of a score of apparently normal people. This threshold is considerably less clear-cut than that for blood sugar, but still seems sufficiently definite to give promise of bedside value.

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[3] Hamman, L., and Hirschmann, I.: The Renal Threshold for Glucose, *ibid.*, p. 27.

[4] Martin: *l. c.*

[5] Allen, F. M.: The Rôle of Fat in Diabetes, Am. Jour. Med. Sci., March, 1917, cliii, 352.

[6] Joslin, E. P.: *l. c.*, p. 90.

TABLE XII.

LIPOID THRESHOLD.

	TOTAL-FAT		TOTAL FATTY ACIDS			LECITHIN			CHOLESTEROL			GLYCERIDES		$\frac{TFA}{L}$			$\frac{L}{C}$			TOTAL LIPOIDS
	W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
Lowest values among 124 diabetic bloods . .	0.49	0.58	0.33	0.44	0.07	0.23	0.13	0.21	0.15	0.13	0.08	0.13	0.00	1.19	1.44	0.17	0.49	0.22	0.22	0.63
Highest values among 20 normal bloods . .	0.67	0.78	0.42	0.47	0.45	0.33	0.26	0.48	0.25	0.31	0.24	0.20	0.15	1.45	2.70	1.14	1.63	1.26	2.60	0.82
No. of diabetic values below highest normal	9	13	6	5		51	38		55	64										10

No threshold is noticeable in either of the other two methods, lecithin or cholesterol, both of which are excessively unsatisfactory in both respects:

1. Extent of overlapping.
2. Frequency of overlapping (38-64).

None of the calculated values are helpful.

(To be continued.)

Clinical Department.

VENTRAL FIXATION OF THE UTERUS, CAUSING DYSTOCIA. RUPTURED UTERUS FOLLOWING VERSION FOR TRANSVERSE PRESENTATION. HYSTERECTOMY AND RECOVERY. REPORT OF A CASE.

BY L. E. PHANEUF, M.D., BOSTON,

Assistant in Gynecology, Tufts College Medical School; Assistant Visiting Gynecologist, Carney Hospital; Assistant Visiting Obstetrician, St. Elizabeth's Hospital.

MRS. I. M. D., 34 years old, married 10 years, housewife, born in Prince Edward Island. *Family History,* negative. *Past History:* operated upon three years previously for appendicitis, and retroposition of the uterus; otherwise negative. *Menstrual History,* negative. *Marital History:* married ten years; one girl nine years old; twins, two boys seven years old; one stillborn child three years previously, at seven and a half months of pregnancy; no miscarriages. Labors, normal. Puerperia, normal.

The patient, seen at her home in consultation with Dr. Daniel J. Harrington, on July 12, 1916, was then in active labor. The position was transverse, the membranes ruptured, and the cord prolapsing. The cervix was soft and about half dilated; it was also directed backwards and hard to reach. The fetal heart rate was 120, sounds of fair quality. There was no marked elevation of the mother's pulse, although she complained of being very weak and tired. The measurements of the bony pelvis were normal.

The patient was removed to a near-by hospital, and prepared for delivery *per vaginam.* After being etherized and catheterized, on examination the cervix was found to dilate very easily, although it was abnormally high, the fundus being held firmly against the abdominal wall. The cord had now stopped pulsating.

The cervix was dilated manually, and offered no resistance to palpation. On introducing the hand in the uterus no contraction ring was found, and the uterus was not firmly contracted on the fetus.

A foot was easily brought down, and a slow breech extraction performed. There was no difficulty with the after-coming head, practically no suprapubic assistance being required. The baby's heart was not beating at birth.

The hand was introduced into the vagina for examination of the cervix, as is customary after versions. The uterus was found ruptured on the right, the rent being about eight inches long, extending to the posterior peritoneum of the broad ligament, but not through it. The patient was bleeding profusely.

A quick manual extraction of the placenta was done, and the patient quickly prepared for a coeliotomy.

The abdomen was opened by an incision five inches long, over the old scar. The fundus of the uterus was found tightly adherent to the abdominal wall; there were also numerous omental adhesions about the uterus. The uterus was freed from surrounding adhesions, and the ovarian and uterine vessels on the right were quickly clamped. A supravaginal hysterectomy with double salpingo-oöphorectomy was performed. The raw areas were quickly covered with peritoneum, and a gauze drain was passed through the vagina. The abdominal wall was sutured in layers, and a cigarette drain to the pelvis was allowed to come out at the inferior angle of the incision.

The patient was returned to her room in fair condition; she was put on the Murphy drip, and digalen mxv. was given every four hours hypodermically.

July 12, 1916, the noon temperature was 100, pulse 96. She complained of slight pain in the abdomen; 8 p.m. the same day the pulse was 96. July 13, 1916, the vaginal drain was removed; no bleeding present; slight distention, relieved by a high compound enema. July 15, 1916, cigarette drain removed; the patient feels well. July 21, 1916, stitches removed; the incision is healed except for the drainage tract, which is filling in fast. July 25, 1916, the patient out of bed on the 13th day after operation. August 1, 1916, *Discharge Note*—The abdominal incision is well healed, except for a small, superficial, granulating area in the drainage tract; no induration, no tenderness. The vaginal examination presents a healed slight laceration of the perineum; the vaginal drainage area is well healed; the cervix is high; there are no masses or areas of tenderness in the pelvis. August 1, 1916, discharged from the hospital. December 6, 1916, the patient reports that she is doing her housework, and feels well, except for an occasional backache. June 4, 1917, the patient has continued to improve, feels well, and does her housework without any discomfort.

CONCLUSIONS.

The operation which was performed for retroposition, three years previously, had apparently been intended to be a Kelly ventral suspension. The latter operation consists of suturing the fundus of the uterus to the parietal peritoneum, allowing a central ligament to form, which holds the uterus in a forward position. This latter procedure does not interfere with labor, when properly performed. At the present time the round ligament suspensions have largely replaced it.

The result in this case proved to be a ventral fixation, which represents an entirely different condition, and which practically always interferes with labor. In the operation for fixation, as the name implies, the fundus of the uterus is fixed to the abdominal wall.

Had the case been seen earlier in labor, or even before the rupture of the membranes, an abdominal Casearean section would have been, in my mind, the operation of choice. This, however, was out of the question when the patient was seen, firstly, on account of the conditions noted above, and secondly, because she sent for her physician only when well advanced in labor, so that he recognized the prolapsed cord upon his arrival.

The fact that the patient was sent to the hospital for immediate delivery, the readiness with which she was prepared for a coeliotomy, with the subsequent saving of blood, were largely responsible for her easy convalescence, and complete and rapid recovery.

The writer has had the opportunity of witnessing and assisting Dr. James W. Markoe of the New York Lying-in Hospital, in a hysterectomy for ruptured uterus with satisfactory recovery. Dr. Ross McPherson in the Bulletin of the same institution, April, 1916, reports a case of spontaneous rupture of the uterus treated by hysterectomy. The patient also recovered.

Medical Progress.

REPORT OF PROGRESS IN OPHTHALMOLOGY.

By Edmund W. Clap, M.D., Boston.

HYPOPYON KERATITIS.

Verhoeff discusses the various forms of treatment recommended for hypopyon keratitis. This is due most often to the pneumococcus and next in frequency caused by the diplobacilli. The author's method of treatment is as follows: With the patient lying down and a speculum in the eye, the ulcer is brought to face directly upward. With a Beer's knife incisions are made in the ulcer as deep as possible without entering the anterior chamber. A crucial incision is made in small ulcers; in large ones, in addition, radiating incisions are made. The infiltrated border of the ulcer is curetted with the point of the knife, and the surface of the cornea about the ulcer dried with small, dry swabs of sterile cotton. A concentrated Lugal's solution—iodine 25, potassium iodide 50, and water 100—is applied on a cotton-tipped toothpick to the ulcer, and after this is moistened a pool is formed in the ulcer and allowed to remain five minutes and then flushed out by a jet of boric acid solution. A rubber bulb with this solution should be in readiness in case the patient moves the eye, for the iodine solution injures the epithelium of the cornea. In cases of small ulcers the Lugal's solution is applied without making the incisions, depending on severity of the infection; when in doubt the incisions should be made, because when the ulcer heals no trace of them remains. In rapidly progressive cases Verhoeff makes a small puncture through the center of the ulcer with the Beer's knife. The puncture is not large enough to evacuate the hypopyon, and that remains to hold iris and lens away from the opening. This puncture causes some pain. Bandage, mercuric chlorid ointment, and atropine are used as after-treatment. If no improvement appears in seventy-two hours the treatment should be repeated. Forty-two cases were treated in this way. The process was checked in all but 5 cases, these having one-half to two-thirds of the corneal surface involved. The average age of the patients with small ulcers was 39 years; of the patients with larger ulcers, 50 years.

ANISOCORIA.

Tarun examined 3610 patients as to inequality in size of pupils. He has the patient seated in a dark room at least two minutes and reflects the light from a plane mirror at a distance of one meter, rapidly shifting from one eye to the other. A difference in size of the pupil can readily be recognized. In refraction cases having no intraocular lesion, 18.54% were anisocoric and the left pupil larger in 54% of these. Of myopic cases the greater myopia had no especial influence on size of pupil. From statistics of various reports, the author finds that in 66% mydriasis is more frequent on the affected side in lung and pleural affections. From 18% anisocoria in normal eyes we pass to a maximum of 70% in Argyll-Robertson pupil.

The author concludes that inequality of the pupil is of little importance when the pupils are active to light and when there is only a slight difference in size, and in some cases even where a marked difference exists. But if there is reflex rigidity or sluggishness, then inequality in size is of great diagnostic value.

TETANUS FROM WOUNDS OF THE EYE.

From a review by Thompson and Stephenson we gather the following about tetanus due to wounds of the eye. Goetz concludes that it is rare, but reports 50 cases in wounds of the eyeball, orbit, eyebrows, upper lid, lower lid and conjunctiva, in this order of frequency. Infection due to wounds by earth or by equine dejecta, rarely operative. Prognosis is grave in proportion to: (1) rapidity of onset, (2) depth and degree of contamination of wound (3) lateness of beginning serum treatment. Schneider estimates 60 cases observed between 1816-1916 and reports 2. Trismus, difficulty in swallowing and paralysis of cranial nerves are early symptoms, and diagnosis is often overlooked by the ophthalmic surgeon. Schneider cites 19 cases where the wound of entrance was the eyeball, and of these 9 were due to a blow from a whip. Four cases followed operations on the eye. Of the 19 cases only 3 recovered.

TRACHOMA.

Gifford calls attention to occlusion of the inner end of the canaliculus in old trachoma. He tried 15 cases and found only one in which at least one of the canaliculi was not occluded. Generally all four are found to be in this condition, with from one to four dilated and containing pus. Occasionally a canaliculus is occluded at both ends with a dilated pus-holding portion between them. In such cases the tear-point may look normal, but if a dilator be passed into the canal and withdrawn pus will be seen to follow it. This condition often is supposed to be a dilated tear sac full of pus. There is so much else wrong with lids and cornea that the lachrymation is looked upon as a result of the irritable cornea, and yet the recurrent corneal ulceration may be due to repeated infection from this source. The suppuration will cease if the canaliculi are slit up and kept open and a zinc colyrium used. It is difficult to maintain an opening into the tear sac, but there is no disadvantage in allowing the connection with the sac to remain closed. The nasal duct is not, as a rule, obstructed.

SPASM OF ACCOMMODATION.

Paton reports two cases of that rare condition—functional spasm of accommodation. He does not mean by this the tonic contraction occurring in hypermetropia to compensate the refractive error, but a sudden development in one or both eyes of a high degree of apparent myopia, which disappears under atropine. It may be continuous or clonic, and may be associated with spasm of other ocular muscles. In one patient at 5 years of age there was 1.50 D. hypermetropia in each eye, with occasional convergent strabismus. At 15 there had developed divergent strabismus of the left eye, which was tenotomized. A few months later refraction was about —75 right and —2 left eye. Four months later myopia of —7 right and —9 left, and this varied. Under atropine, right —5, left —1, but the spasm of accommodation reappeared when atropine was omitted. Since then her eyes vary from slight spasm up to —9 or —10 D. The second case was in a soldier seen 5 months after a slight concussion of the brain.

ASTEROID HYALITIS (T. B. HOLLOWAY).

Under this name Benson described snow-white globular opacities in the vitreous. These spots are globular, many ellipsoid and dull white, not shining like cholesterin. A few have a projecting spur, while white strands are also noted. The movement of these opacities is sometimes very slight, sometimes extensive on movement of the eye, but they do not settle to the bottom of the vitreous, but return to their original positions. They may be in certain areas or the whole vitreous may be studded with them. Vision is affected very little, even where the vitreous is abundantly filled with these opacities. They do not seem to be cholesterin, though they may be formed at some stage of the same process that produces cholesterin. Synchysis scintillans is a condition of advanced years ascribed to diseases of the liver, arthritis, alcoholism, syphilis and arteriosclerosis. It has been found with uveitis, affections of retina, changes in optic nerve, glaucoma, and traumatic detachment of the retina. Among the reports of synchysis scintillans several cases of this snowball type are reported, once with the bright cholesterin crystals present, too. The author reports four cases and says probably other cases have been grouped with true synchysis scintillans. The etiology is unknown, but apparently hypercholesterolemia has no relation to it.

HETEROCHROMIA IRIDIS (E. C. ELLETT).

This is a condition in which the whole iris of one eye is of the same color, but the color is different from that of the other eye. This condition, not rare, usually in brunettes, is noticed at birth or before maturity in the majority of cases. The difference in color may arise either from absence of pigmentation on one eye or from destruction of pigment through some pathologic process. The lighter colored eye is the one almost without exception where the pathologic process occurs. These changes are: (1) low-grade cyclitis, limited to vitreous opacities and occasionally deposits on back of cornea; (2) development of cataract; (3) occurrence of glaucoma simplex rarely. The underlying cause has been supposed to be a lesion of the cervical sympathetic, but experimental work has not shown much influence of the sympathetic on the eye, nor have injuries of the cervical sympathetic been followed by this condition. Of course a chronic uveal inflammation would account for the change in color of the iris, and pathological examination has shown many cases to be due to chronic iridocyclitis. Cases of uveitis with increase of tension are sometimes helped by atropine, but others occur where this drug increases the tension. The author reports in detail 12 cases, 5 of them with glaucoma.

MYOPIA.

From the *British Journal of Ophthalmology* we take the following review of work on myopia. Koster thinks school myopia is caused by heredity and over-exertion. These eyes are suffering from a chronic sight chorio-retinitis. By effort of accommodation the eyes are made hyperemic and the posterior part of the globe becomes ectatic. Pollock employs prolonged use of atropine in treating myopia, and has observed not only no increase in many cases, but also some cases of actual decrease in the myopia. On the other hand, Sidler-Huguerin thinks that myopia cannot be arrested nor its degenerative changes stopped. His study of 4000 myopia patients revealed disease of the macula in 218, and of these the myopia was less than 10 D in 49. Corneal maculae were found in 187. The writer thinks that myopia gradually increases, whatever we do to combat it, and that full correction is not always capable of preventing the increase. From radiographs he has satisfied himself that there is no close relationship between the contents of the orbit on one side and the refraction of the eye on the same side. He reports a series of 150 anisometropes, each of whom used practically only one eye. These patients gradually became more and more myopic in the worse eye, which was not used. He considers heredity as the most important factor in myopia, and thinks the only remedy is in proper selection of individuals for marriage.

END-RESULTS IN INTERSTITIAL KERATITIS.

Derby examined 96 cases of interstitial keratitis with regard to the end-result, and 94 of these had the disease in both eyes. Except in a very few instances the inflammation had come to an end at least two years previously, so that the visual results may be regarded as reasonably permanent. Corneal opacity of greater or less density was seen in 168 eyes, while in 14 none was observed. Of 186 eyes examined for blood vessels in the cornea 171 showed them. Posterior synechiae were present in 62 eyes. In 4 eyes slight opacity of the lens was left. Vitreous opacities were seen in 11 eyes, but in 38, either from contracted pupil or corneal scars, this examination could not be made. In 148 eyes 81 showed lesions of chorioid and retina, mostly disseminated rounded lesions in the equatorial region. As to vision, the patient, usually a child, may have one good eye, so that statistics as to the number of eyes defective may be misleading. From the standpoint of education, 24 children would have the same chance as a normal child; 25 more could study normally, but might be handicapped in choosing an occupation; 20 or possibly more would have to be educated in special classes or in institutions for the blind, as certainly the remaining five would be. Of course myopia may develop later; it was noted in 19 of 80 cases. Igersheimer's statistics are worse than this; 40% of his cases had a vision of less than 2/10. Derby believes the great majority of cases of interstitial keratitis are due to inherited syphilis, and that recurrences do occur, and that specific treatment should be used for the future good of the patient, if not to control the eye disease.

EFFECTS OF RADIANT ENERGY ON THE EYE.

Verhoeff and Bell have made an exhaustive experimental investigation into the pathological effects of radiant energy on the eye This valuable work does not lend itself to abstraction but should be read in full, but some conclusions of interest to the ophthalmic surgeon may be quoted. The authors set out to discover what pathological effects can be produced in the structures of the eye by exposure to artificial or natural sources of light, viz., by radiant energy of medium wave-lengths from the infrared to the ultra-violet. The authors show that no injury to the retina can occur from ultraviolet light, even from the most severe exposures. Thermic effects from any source are not to be considered as no one could bear extreme heat radiation on the external eye long enough to produce damage. Using sources of light employed for practical lighting, but of immensely greater intensity than would ordinarily be used, they found no chance of damage to the retina. The heavy arcs for welding; furnaces and short circuits, and posibly searchlights, present the only danger from the standpoint of thermic effects. No sources used for lighting can be called dangerous. Brilliant sources of light are disagreeable and produce temporary scotomata, disturbances of color vision, annoying after-images and fatigue, but as regards definite pathological effects or permanent impairment of vision from exposure to luminous rays, nothing of a positive nature was found, either clinically or experimentally. The injury to the retina in eclipse blindness is entirely thermic, due to concentration of solar energy by the refracting system of the eye, and is not due to ultra-violet rays. Glass-blower's cataract is due not to ultra-violet light, but probably to the overheating of the eye as a whole, with consequent disturbed nutrition of the lens. The lens screens the retina from abiotic radiations, so that protective glasses for this purpose are superfluous. The question of protective glasses for the ordinary individual is answered by choosing those best adapted to obviate the sensations arising from too strong illumination; any glass that reduces light will do, but preferably a glass that transmits light chiefly in the middle of the spectrum for which the eye is customarily focused. The color of the glass is of little importance. Glasses absorbing at both ends of the spectrum so as to bring the strongest light in the region of greatest luminosity, viz., the yellow-green, are perhaps to be preferred.

Book Reviews.

The Medical Clinics of North America. July and September, 1917, pp. 193 and 269. Philadelphia and London: W. B. Saunders Company.

The initial number, July, 1917, of this new publication in the field of medical clinics supersedes the older Medical Clinics of Chicago, the final number of which appeared in May, 1917.

The plan of this new periodical is unique in that it calls for a bi-monthly magazine, each number to contain a collection of papers and post-graduate clinic from one of the great medical centers of the country.

The first, the Johns Hopkins Number, contains contributions by Doctors Janeway, Barker, Mosenthal, Futcher, Hamman and Brown. The papers cover a wide range of internal medicine, and the subjects are handled in an essentially practical and informal manner.

Dr. Janeway presents a short clinic on "postural albuminuria," which is of very distinct value. The discussions of hypertension by Dr. Mosenthal and Dr. Hamman present the modern conception of this condition in a particularly sane and interesting manner.

Dr. Barker in his clinic on "atrial fibrillation" gives an excellent discussion of the subject, including prognosis and treatment. Against the commoner conditions with which the number is mainly concerned, two very unusual conditions presented by Dr. Hamman, one, "dermoid cyst of the mediastinum," two, "Milroy's Disease" stand in contrast.

The number closes with some gastro-intestinal notes by Dr. Thomas R. Brown concerning "gastroptosis," "chronic appendix," and the medical after-care of surgical patients following abdominal operation.

A gratifying feature of this excellent number is the incorporation in some of the papers of a brief and up-to-date bibliography.

The September, Philadelphia, Number contains papers and clinics from sixteen authors, drawn from various Philadelphia hospitals and clinics. It is impossible to comment on all the interesting material, but attention may be called to the contribution of Dr. Pancoast on "The Diagnosis of Pulmonary Tuberculosis by the Roentgen Ray," well illustrated by skiagrams as an excellent discussion and a clear statement of what x-ray may be expected to do, and also its limitation in this condition.

Dr. McCrae's paper on "Aortitis" calls attention to the importance of infectious diseases as a frequent cause, and emphasizes the two great tendencies to regard syphilis as the sole etiological factor.

Dr. Schamberg contributes a short but comprehensive paper on "The Causes of Reaction after Salvarsan."

Dr. Kolmer's discussion of "The Diagnostic Value of Examination of the Cerebrospinal Fluid" describes clearly the worth-while tests and their significance.

On the whole, it is fair to say that the excellence of the first number has been maintained, and if the same standard is carried out, the series will make a valuable addition to this class of medical publication.

The Surgical Clinics of Chicago. October, 1917. Vol. I, No. 5. With 84 illustrations. Published bi-monthly. Philadelphia and London. W. B. Saunders Company.

This paper volume, in the usual shape, contains 100 pages, and cases from 16 surgical clinics in Chicago; it includes the well-known names of Bevan, Ochsner, Ridlon, Halstead, Harris, Wyllys Andrews, Phemister, Percy, Beck, Eisendrath and Speed, and other equally able, though possibly not so widely known, operators.

Dr. Ochsner finds it well worth his while to write on the somewhat plebeian subject of "Varicose Veins," and presents a very good discussion on it; Dr. Ridlon writes on "Hip Disease," and Dr. Bevan on "Tumors of the Breast, Benign and Malignant."

The volume is well illustrated and worthy of study.

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SHELL SHOCK AND THE AMERICAN ARMY.

No medico-military problems of the war are more striking than those growing out of the extraordinary incidence of mental and functional nervous diseases ("shell shock"). Together, these disorders are responsible for not less than one-seventh of all discharges for disability from the British Army, or one-third, if discharges for wounds are excluded. A medical service newly confronted, like ours, with the task of caring for the sick and wounded of a large army, cannot ignore such important cause of invalidism. By their very nature, moreover, these diseases endanger the morale and discipline of troops in a special way, and require attention for purely military reasons. In order that as many men as possible may be returned to the colors or sent into civil life free from disabilities which will incapacitate them for work and self-support, it is highly desirable to make use of all available information as to the nature of these diseases among soldiers in the armies of our allies, and as to their treatment at the front, at the bases, and at the centers established in home territory for their "reconstruction."

England has had three years' experience in dealing with the medical problems of the war. During that time, opinion has matured as to the nature, causes and treatment of the psychoses and neuroses which prevail so extensively among troops. A sufficient number of different methods of military management have been tried to make it possible to judge of their relative merits.

Although an excessive incidence of mental diseases has been noted in all recent wars, it is only in the present one that functional nervous diseases have constituted a major medico-military problem. As every nation and race engaged is suffering severely from these disorders, it is apparent that new conditions of warfare are chiefly responsible for their prevalence. None of these new conditions is more terrible than the sustained shell fire with high explosives which has characterized most of the fighting. It is not surprising, therefore, that the term "shell shock" should have come into general use to designate this group of disorders. The vivid, terse name quickly became popular, and now it is applied to practically any nervous symptoms in soldiers exposed to shell fire that cannot be explained by some obvious physical injury. It is used so very loosely that it is applied not only to all functional nervous diseases, but to well-known forms of mental disease, even general paresis. If all neuroses among soldiers were included in these groups the use of the term "shell shock" might be defended. But many hundreds of soldiers who have not been exposed to battle conditions at all develop symptoms almost identical with those in men whose nervous disorders are attributed to shell fire. The non-expeditionary forces supply a considerable proportion of these cases.

The medical statistics of the war are as yet untabulated. Even if the records contained the information desired it would be very difficult to state the prevalence of the neuroses on account of the defective nomenclature employed. It is doubtful if there is another group of diseases in which more confusion of terms exists. Nervous or mental symptoms coming to attention after the soldier has been exposed to severe shell fire are almost certain to be diagnosed as "shell shock," and yet when such patients are received in England, well-defined cases of general paresis, epilepsy, or dementia precox are often found among them. This source of confusion tends to swell the number of cases reported under the term "shell shock," but there are many other sources of error which tend to diminish the apparent prevalence of the war neuroses. It is the belief of those who have made an effort to ascertain the prevalence of the war neuroses that the rate among the expeditionary forces is not less than ten per thousand annually, and among the home forces not less than three per thousand.

The experience of the British "shell shock" hospitals emphasizes the fact that the treatment of war neuroses is essentially a problem in psychological medicine. While patients with severe symptoms of long duration recover in the hands of physicians who see but dimly the mechanism of their disease, and are unaware of the means by which recovery actually takes place, no credit belongs to the physician in such cases and but little to the type of environment provided. In the great majority of instances the completeness, promptness and durability of recovery depend upon the insight shown by the medical officers under whose charge the soldiers come, and their resourcefulness and skill in applying treatment.

The resources at the disposal of the physician in treating the war neuroses are varied. The patient must be reëducated in will, thought, feeling, and function. Persuasion, a powerful resource, may be employed, directly backed by knowledge on the part of the patient as well as the physician of the mechanism of the particular disorder present. Indirectly, it must pervade the atmosphere of the special ward or hospital for "shell shock." Hypnotism is valuable as an adjunct to persuasion, and as a means of convincing the patient that no organic disease or injury is responsible for his loss of function. Thus, in mutism; the patient speaks under hypnosis or through hypnotic suggestion, and thereafter must admit the integrity of his organs of speech. The striking effects of hypnotism in the removal of symptoms are somewhat offset by the fact that the most suggestible who yield to it most readily are particularly likely to be the constitutionally neurotic. A mental mechanism similar to that which produced the disorder is being used in such cases to bring about a cure.

The experience in English hospitals has demonstrated the great danger of aimless lounging, too many entertainments and relaxing recreations, such as frequent motor rides, etc. It must be remembered that shell shock cases suffer from a disorder of will as well as function, and it is impossible to effect a cure if attention is directed to one at the expense of the other. As Dr. H. Crichton Miller has put it, "Shell shock produces a condition which is essentially childish and infantile in its nature. Rest in bed and simple encouragement is not enough to educate a child. Progressive daily achievement is the only way whereby manhood and self-respect can be regained."

It is evident that the outcome in the war neuroses is good from a medical point of view and poor from a military point of view. It is the opinion of all those consulted that, with the end of the war, most cases, even the most severe, will speedily recover, those who do not being the constitutionally neurotic and patients who have been so badly managed that very unfavorable habit-reactions have developed. This cheering fact, however, brings little consolation to those who are chiefly concerned with the wastage of fighting men. The lesson to be learned from the British results seems clear,—that treatment by medical officers with special training in psychiatry should be made available just as near the front as military exigency will permit, and that patients who cannot be reached at this point should be treated in special hospitals in France, until it is apparent that they cannot be returned to the firing-lines. As soon as this fact is established, military needs and humanitarian ends coincide. Patients should then be sent home as soon as possible. The military commander may have the satisfaction of knowing that food need not be brought across to feed a soldier who can render no useful military service, and the medical officer may feel that his patient will have what he most needs for his recovery,—home and safety and an environment in which he can readjust.

Although it might be considered more appropriately under the heading of prevention than under that of treatment, the most important recommendation to be made is that of rigidly excluding insane, feeble-minded, psychopathic and neuropathic individuals from the forces which are to be sent to France and exposed to the terrific stress of modern war. Not only the medical officers but the line officers interviewed in England emphasized, over and over again, the importance of not accepting mentally unstable recruits for military service at the front. If the period of training at the concentration camps is used for observation and examination, it is within our power to reduce very materially the difficult problem of caring for mental and nervous cases in France, increase the military efficiency of the expeditionary forces, and save the country millions of dollars in pensions. Sir William Osler, who has had a large experience in the selection of recruits for the British Army and has seen the disastrous results of carelessness in this respect, feels so strongly on the subject that he has recently made his views known in a letter to the *Journal of the American Medical Association,* in which he mentions neuropathic make-up as one of the three great causes for the invariable rejection of recruits. In personal conversation he gave numerous illustrations of the burden which the acceptance of neurotic recruits had unnecessarily thrown upon an army struggling to surmount the difficult medical problems inseparable from the war.

Neuroses are very common among soldiers who have never been exposed to shell fire, and will undoubtedly be seen frequently among non-expeditionary troops in this country. In England nearly thirty per cent. of all men from the home forces admitted to one general hospital were suffering from various neuroses. Most of these men were of very neurotic make-up. Many had had previous nervous breakdowns. Fear, even in the comparatively harmless camp exercises, was a common cause of neurotic symptoms. Heart symptoms were exceedingly common. The same experience in our own training camps can be confidently predicted.

The imminence of this problem in our country at the present time lends interest to the "War Shock" program of the annual conference of the Massachusetts Society for Mental Hygiene, held in Tremont Temple on Wednesday, January 9, in the afternoon, program of which appeared in last week's issue of the JOURNAL.

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STANDARDIZATION OF SCHOOL HYGIENE.

THE Massachusetts State Department of Health has made a thorough investigation of the present status of medical supervision of school children throughout the state. A report of this investigation appears in the November number of the *Public Health Bulletin.*

"The importance of child hygiene has long been recognized in Massachusetts by the few, as illustrated by the report of the commission appointed by the Governor of the Commonwealth in 1849 to make a sanitary survey of the State. Their report, made the following year, contains these specific recommendations:

XVIII. We recommend that, in erecting schoolhouses, churches, and other public buildings, health should be regarded in their site, structure, heating apparatus and ventilation.

XXVI. We recommend that measures be taken to ascertain the amount of sickness suffered among the scholars who attend the public schools and other seminaries of learning in the Commonwealth.

In 1875 and following years Dr. Henry P. Bowditch of Boston made elaborate studies of the physical growth of school children in Boston, which appear in the annual reports of the State Board of Health for 1877 and 1879.

The first systematic work in the line of school hygiene in Massachusetts was inaugurated in Boston in 1894 under the term 'medical inspection of schools.' An effort to control an outbreak of diphtheria was the immediate occasion for the beginning of this work.

Brookline began similar work the same year. Work was begun in Marblehead in 1895, while in Beverly, Cambridge and Gloucester work was inaugurated in the following year.

Interest in medical inspection gradually increased, the work being taken up in a community here and there until 1906, when the Legislature passed a bill requiring school inspection to be carried on throughout the State."

With the spread of this work and the increasing amount of attention devoted to it, the term "medical inspection" has come to be regarded as too narrow, since many other things are included in conserving the health of school children beside sickness; hence the term "school hygiene," as comprehending all things which influence the health and consequently the welfare and efficiency of the pupil, has come into use.

School hygiene work is carried on by the boards of health in eighteen cities and in some half dozen towns. Elsewhere it is in the hands of the school authorities. The number of school physicians employed seems to be determined without reference to the number of pupils, since a single physician has under his care from 10 to 7000 pupils. In 215 communities the school physician's salary does not exceed $100 per year, in the majority of instances much less, while seven towns pay nothing. Sixty-two communities pay in excess of $200 but not to exceed $300. Salaries above this amount are few. In the great majority of places for which information is at hand the amount of time devoted to school work is not more than one to two hours per week. The examination of the pupils is more largely an inspection, and includes the skin (for skin diseases and pediculosis), the nose and throat (for tonsils and adenoids), and perhaps the teeth, though they are infrequently mentioned. Sixty communities employ school nurses, either on a full-time or part-time basis.

"This report demonstrates beyond question the almost entire absence of uniformity in school hygiene work and the lack of any standard of such work as it is carried out in Massachusetts. The value of this work, however, when conscientiously and thoroughly carried out, is well recognized and established.

At the present time there is nowhere lodged the authority, either in the State Board of Education or in the State Department of Health, to establish standards, even minimum standards, for the carrying on of school hygiene work. The matter is left wholly to the individual boards of health or school committees. Hence, though some communities are doing excellent work, many others are doing the work in a more or less perfunctory manner, failing to achieve the maximum benefits of school hygiene work.

Under such circumstances it becomes an almost hopeless task to secure even a minimum standard of work in school hygiene, or to attempt to secure an approach toward more uniform practice and efficiency.

School hygiene concerns itself with:

1. The location, the housing and the equipment of schools so far as conditions affecting the health of the pupils are concerned.
2. The health, the physical condition, of the pupil himself, including inspection and examination to determine the presence of defects, if any, and the devising of means for their relief.
3. The teaching of hygiene, including especially recent knowledge as to the transmission of communicable diseases, the importance of proper health habits, etc.

To secure maximum efficiency in school hygiene work there should be:

1. Provision for determining the healthfulness of sites and plans for school buildings, and for their subsequent regular inspection.
2. Provision for minimum requirements as to the inspection and examination of school children, and for the supervision of such work.
3. Provision for the extension, by the board of health, as a health measure, of similar inspection and examination to private and parochial schools.
4. Provision for the employment of school nurses in addition to school physicians in order to increase the efficiency of school work.
5. Provision of means to aid smaller communities in maintaining such school hygiene work, as is now made in aiding the mto employ school superintendents.
6. Provision for the prescribing of standards of teaching hygiene in the schools and adequate supervision of the same.

Such measures would make possible much progress in health work in this State, would greatly increase its efficiency, and would eventually repay many times its cost in added health, comfort and productiveness of our people."

* * *

THE LIMIT OF RECOVERY IN HEMIPLEGIA.*

Any attitude towards our patients which is in the direction of optimism, provided always that such optimism is not altogether unjustifiable, is to be fostered, for its favorable effect on the patient's psyche, if for no other reason. We turn, therefore, with pleasure to the recent efforts to extend the limits of recovery in hemiplegia. It has been generally held in the past that, following the hemorrhagic insult, there was a paralysis affecting all the movements of one side, next an improvement, progressing in some cases to an almost complete recovery, while in other cases there was very little change for the better.

It is pretty generally agreed, anyway, that after a time, varyingly stated as six months, one year, a year and a half, etc., we must look upon the *status quo* as the maximum of improvement. Thus many cases seem after a year or so to be doomed to complete hemiplegia, monoplegia, or perhaps contractures or athetoid movements.

But lately the gloom of this picture has become illumined by rays of hope. It has been asserted that, in a great many of these longstanding cases, particularly when treatment has been scant, there is a possibility of great improvement, amounting in some instances substantially to restoration of function. This theory, once evolved, was apparently proved with monkeys, and then extended to human patients, where encouraging results have been reported.

To review a typical case, we have first the rupture of a cerebral vessel with hemorrhage into the cortex, destroying part of the brain tissue.

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* See "The Possibility of Recovery in Long-standing Hemiplegias," by S. I. Franz, Mildred Scheetz and Anita Wilson, Journal American Medical Association.

Not to go too exhaustively into the pathology, we will say that there is an extravasation of blood over the motor area, causing a hemiplegia. Later on, with the absorption of the blood-clot, much of the pressure is removed, and the individual synchronously recovers part of the function of the affected side. There remains, however, some actual destruction of cerebral tissue which is not and cannot be replaced, and which fixes a limit to recovery unless we are to suppose one of two things,—a compensatory adaptation of other areas on the same side, or an assumption from the sound side of attributes of the diseased side,—a rather incredible hypothesis.

Whether or not either of these things occurs cannot be definitely stated at this time. Certainly it has been demonstrated that cases of several years' standing can be taken in hand and by reëducation be given back a large amount of function supposedly lost. This may, of course, be due to the fact that these hemiplegics from one cause or another do not always obtain treatment *secundum artem*. Either the patient neglects medical advice entirely after the first shock, or he neglects the massage and use of the affected side, which is so necessary. The result is a limb only, we will say about 30% potent, the 70% subnormality being 20% actual destruction of cortical tissue and 50% neglect. Now if we take such a patient in hand we can get back the 50% of use, making the limb useful to 80% of its normal, which contrasted with the former condition, seems almost like recovery. But it is not really recovery, and what has really been done has been to show that the limit of recovery has hitherto been unnecessarily restricted.

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INDIVIDUAL INCOME TAX RETURNS.

At least 350,000 individuals residing in Massachusetts will be required, during the months of January and February, 1918, to make returns of their income for the year 1917 to the Federal Government. Every unmarried person who had an income of $1000 or more during the year 1917, and every married individual living with wife or husband who had an income of $2000 or more for the year 1917 must make this return on or before March 1, 1918. Inasmuch as the great majority of people required to make this return of income are not thoroughly acquainted with the requirements of the law as passed by Congress on October 3, 1917, the Income Tax office is planning a campaign of publicity in order that they may become acquainted with the provisions of the law, and in addition plans to have, during the months of January and February, approximately one hundred federal income tax experts stationed throughout the State, in order that they may give advice and make out returns, without any cost to the taxpayer.

The public will be notified later of the dates upon which the income tax men will be in the different towns and cities throughout the State, and should await their coming before attempting to make out their returns. The hours of these men will be so arranged that individuals who are employed throughout the day will be given an opportunity to consult them and make returns out under their supervision.

The Income Tax Office at Boston has been overwhelmed with correspondence incidental to the new war revenue bill of October 3, 1917, since the date of its enactment. It is urgently requested that the public refrain from writing to this office for returns or for interpretations of the law, as correct interpretations of the law will be furnished through the press and by the income tax men, and blank forms upon which the individual taxpayers will make returns will be at convenient points for distribution in the towns and cities of the State in the early part of January.

Taxpayers who have made income tax returns for previous years will, as heretofore, receive their blanks through the mail.

Watch the papers for further information.

JOHN F. MALLEY, *Collector*.

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MEDICAL NOTES.

NEW FOOD CONSERVATION MOVEMENT.—Recently, at the home of Mr. Adolph Lewisohn, New York City, there was organized a new movement to conserve food, homes, health and woman power, during war conditions and after. The movement, to be known as the American Cooked Food Service, has originated with a group interested in the social significance of a new method of furnishing cooked meals to homes, from central stations scattered throughout the city. The incorporators are Mrs. Herbert L. Satterlee, Mr. Adolph Lewisohn, and Mrs. Charles H. Sabin. Associated with them are Mrs. William Pierson Hamilton, Mr. William S. Curtis, Mrs. Charles B. Alexander and Mrs. Charles H. Senff.

The officers elected were: president, Miss Jessie H. Bancroft; vice-president, Mr. Adolph Lewisohn; secretary, Mrs. William G. Shailer; treasurer, Dr. Belle J. Macdonald. Other directors are Mrs. Edgerton L. Winthrop, Jr., Mrs. Herbert L. Satterlee, and Mrs. Ransom S. Hooker. Mrs. Alice McKay Kelly, now organizing Red Cross canteens in Italy, is to be field secretary, and Mrs. Emma Waldron Davis, executive.

The movement has the personal endorsement of Mr. Hoover, and in observing all war needs will have the advantage over theoretical instruction of placing the actual approved and prepared food on the table. Trained dietitians will see that balanced menus prevent underfeeding during the war stress, and will attend to special dietary needs. An official consulting board, to give assistance and advice on various technical and nutrition problems will include Mr. Herbert L. Satterlee, Dr. Graham Lusk, Dr. Henry Dwight Chapin, Dr. S. Josephine Baker, Dr. C. E. A. Winslow, Dr. S. Adolphus Knopf, Mr. Cyrus C. Miller, Dr. Thomas D. Wood, Mr. George L. Bennett, Mr. Frederick S. Crum, Dr. G. Reese Satterlee, Dr. Sumner Shailer, Professor Irving Fisher, Mrs. John E. Milholland and Mrs. Bertha L. Grimes.

The first station will be opened in a few weeks at 213 West 79th Street, with a motor service extending over a two-miles radius. The food will be carried in insulated containers that keep it hot for several hours. The movement is designed to save the independent consumer by means of a centralized service from commercial exploitation for his food supplies, and to keep together homes that otherwise might disintegrate because of the draft of women, domestic workers and house mothers, into industrial and other war service. Similar movements have been started in London to meet war conditions.

Hospital Bequests.—By the will of the late Louis Summerfield of Boston the Boston Floating Hospital is to receive the sum of $500.

By the will of the late William H. White of New York, St. Luke's Hospital is named as a residuary legatee and will receive a sum of from $500,000 to $1,000,000.

American Congress on Internal Medicine.—The second scientific session of the American Congress on Internal Medicine was held in Pittsburgh, Pa., on December 27 and 28. The subject for discussion on the first day was "The Roentgen Rays in Internal Medicine." On the second day Dr. William H. Park of New York spoke on "The Communicable Diseases in Modern Warfare and Their Prevention."

Carnegie Institution Embryological Department.—The following letter has been received regarding the continuation of embryological study by the Carnegie Institution, following the death of its director, Dr. Franklin P. Mall of Johns Hopkins University:

"This is to announce the death, on November 17, of Professor Franklin P. Mall, under whose direction this laboratory and its plan of work were established. The loss which this means to the progress of human embryology is very great; it is a loss in which the medical profession, and you, especially, as one of our correspondents, will be deeply concerned.

At the same time we wish to state that this great blow to our department is to be met by the redoubling of our efforts. The collection of human embryos which, through the unceasing zeal of Dr. Mall, has become by far the largest in existence, is to be still further increased, and generous provision has been made by the Carnegie Institution of Washington whereby the embryological studies based upon the collection are to be carried on without interruption. Our success in this will depend in part upon you, and we earnesly request that you continue to send us every embryo and every fragment of abortion material that may come into your hands.

Yours very truly,
George L. Streeter, *Acting Director.*"

London Death Rates.—Statistics recently published show that the death rate for the City of London for the month of October, 1917, was 12.5 per thousand inhabitants. The highest rate was in the district of Finsbury, which had a rate of 19.8, and the lowest in Hampstead, which had a rate of 9.

WAR NOTES.

Austrian Bath Train.—Colonel Joseph H. Ford gives the following description in the *Military Surgeon* of a bath train in use in the Austro-Hungarian Army:

"In addition to the usual locomotive for transport, it had another altered to pump water and supply steam for disinfection and for warming the bath water. Two living cars housed the personnel (1 second lieutenant, 6 train crew, 17 technical staff). Five store cars carried soap, towels, brushes, 10% naphthalin ointment in vaseline, 10,000 clean clothing outfits for men to wear while their own was being disinfected. Water for two days was carried in two tank cars, each holding 40 tons. There were three disinfecting cars, of which one disinfected underclothing at 103° C. in half an hour; the other two disinfected furs, overcoats, boots, etc., with formalin at 60° C. in six hours. There were five cars in the bathing section. Men undressed in the center car, each putting his kit in a sack, taken away at once for disinfection, and they themselves passed into the next car either way, where each picked up soap and towel and washed himself. The bath car had a 25-ton tank on the roof, and 30 shower douches allowed seven gallons of water at 98° F. to fall on each of the 30 bathers in five minutes, by the end of which time he was supposed to be clean. The car was lighted by numerous frosted windows or by overhead electric lights. The man then dried himself and rubbed himself over, especially the hairy parts, with the 10% naphthalin ointment and passed into the next car, where he dressed himself in the outfit laid ready for him, remaining there till his own clothes were disinfected and he could change into them. Each train was estimated to bathe 1400 to 2000 men daily, but one, says Colonel Ford, had been known to deal with 3600. Sometimes the bathing train had a laundry attached; more usually the laundry was independent, and carried by a motor lorry with trailer. It had a washing machine, centrifugal drier, drying closets, and a mangle; with 23 men as staff, they were expected to wash a ton of dirty clothes in a day."

U. S. Medical Department to Use Moving Pictures.—One of the most important and most progressive educational innovations just announced, is the establishment of a new sub-division of the Surgeon-General's Office in conjunction with the Surgeon-General's Library and Army Medical Museum, to furnish moving pictures or slides of camp activities relating to the conduct of work in the Medical Department, and the establishment of a suitable repository for these valuable pictorial data.

The repository will be for the accommodation of positives or negatives of all important military-medical films or slides, which are to be availabls for instruction purposes in camps or cantonments of the army and for instruction in the medical schools of the country. These films and slides will be loaned for use in conjunction with lectures and other courses of study in medical schools and for educational uses in the training camps and cantonments. It is the plan of the Surgeon-General's Office to supplement the courses of instruction given under the direction of the Medical Department in officers' training camps, as well as in the National Guard and National Army camps, with these pictures.

As it has been repeatedly demonstrated that students attain a higher percentage where courses are supplemented pictorially, this innovation, planned and put into operation by the Surgeon-General's Office, will be appreciated as of value, not only in securing better results, but in making the courses doubly interesting.

The Surgeon-General's Office seeks the cooperation of the medical profession in securing access to negatives of unusual cases in every branch of surgery not now possessed by the Library of Moving Pictures of the Surgeon-General's Office, and would appreciate the donation of positives where possible.

The new branch is under the direction of Col. William O. Owens, curator of the Surgeon-General's Library and Army Medical Museum, Seventh and B. Streets, S.W., Washington, D. C., to whom correspondence may be addressed.

Tuberculosis and the War.—The experience of England and Wales with respect to tuberculosis during the past few years is practically identical with that of the continental countries engaged in the war, namely, that the disease has increased, both in prevalence and in fatality. A table accompanies an article on this subject published in a recent number of *The Lancet*, showing that, comparing the experience of 1913, the last complete year before the war, with subsequent years, the deaths from pulmonary tuberculosis increased by 1582 in the year 1914, by 4621 in 1915, and by 4490 in 1916, the third year of the war.

In commenting on the increased mortality shown in this table, Newsholme says: "Men in the Army and men and women in industrial employment, notwithstanding the efforts to minimize these results, have been exposed to conditions leading to the spread of tuberculosis and to the calling into activity of latent disease. A large number of unrecognized or partly recovered consumptives have entered the Army or have been employed at high wages in munition and other works. In many instances there have been overwork and excessive exposure to irritating dust. Commonly, also, owing to great migrations of military and civil population, there has been overcrowding under conditions unfavorable to health. These are the outstanding facts. They will need to be further considered in the light of the current year's experience.

"The experience in this country appears to coincide with that of the continental countries engaged in the present war. In all of them, so far as can be gathered from official information, tuberculosis appears to have been more rife and more fatal than prior to the war. It is proper to state that this unfavorable record would almost certainly have been worse but for the organized efforts to improve housing conditions in areas the population of which has been swollen by war work, and especially for the efforts made by the Government to secure improved conditions of work for munition workers, as well as to cope with the special housing difficulties which have arisen. I may draw attention, furthermore, to the fact that, notwithstanding the increase in the population of England and Wales in the interval, the deaths from pulmonary tuberculosis were fewer than in so recent a year as 1902."

Soap Treatment of Wounds.—From France comes the report of the use of soap in the treatment of wounds. The white soap of Marseilles (Castile soap) was used and the wound washed, where possible, with gauze swabs wet with the soap solution. The lack of friction permits such devices to slide over the surface of certain classes of wounds without irritation. In other cases irrigation has been effected by means of an elevated reservoir. This treatment is continued until the results are free from pus or extraneous material, and then a sort of "embalment"—improper term probably, but illustrative—is effected with the soap. Cloths, with a 20% solution of soap liquor are rolled and manipulated in the hands till a thorough distribution of the soap through the gauze is effected. This process is important in the eyes of the technicians, for it produces a dressing filled with air bubbles which is in effect a very fine sponge. By careful manipulation a coating of soap may be placed over every part of the wound, which may be even a centimeter in thickness. This may be covered with a moist layer of absorbent cotton, and a bandage will hold it in place. Such a dressing will last a couple of days.

Red Cross Tuberculosis Hospital in Paris.—The first tuberculosis hospital operated by the Red Cross in France is the Edward L. Trudeau Tuberculosis Sanatorium recently opened in Paris. The first patients were refugee women and children. It is expected that the hospital will have equipment for 1200 beds. Dr. James I. Gamble of Baltimore is in charge.

Health of Men in Cantonments.—Surgeon-General Gorgas in reporting health conditions in army cantonments, states that for the week ending December 21, there were 21 more deaths in the National Army than during the week before, and 45 fewer in the National Guard. Pneumonia caused the greatest number of deaths,—87 out of 120 deaths in the National Guard and 77 out of 118 deaths in the National Army. Measles still continues to spread.

Honors for Harvard Unit.—Field Marshal Haig has mentioned several nurses and surgeons, members of the Harvard Unit, for notable service. They include Lieut.-Col. Hugh Cabot, Major Harvey Cushing, Major V. H. Kazzanjian, Lieut.-Col. R. U. Patterson, and Private A. Mason. The nurses include Miss V. Allen and Miss G. Davidson.

War Relief Funds.—On Jan. 5 the totals of the principal New England war relief funds reached the following amounts:

Halifax Fund	$665,258.93
French Wounded Fund	307,418.00
Armenian-Syrian Fund	275,014.62
Serbian Fund	125,725.42
Italian Fund	117,040.49

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending December 29, 1917, the number of deaths reported was 257, against 259 last year, with a rate of 17.35, against 17.72 last year. There were 37 deaths under one year of age, against 29 last year.

The number of cases of principal reportable diseases were: diphtheria, 108; scarlet fever, 34; measles, 78; whooping cough, 48; typhoid fever, 1; tuberculosis, 43.

Included in the above were the following cases of non-residents: diphtheria, 5; scarlet fever, 5; measles, 4; tuberculosis, 5.

Total deaths from these diseases were: diphtheria, 11; scarlet fever, 2; measles, 2; tuberculosis, 23.

Included in the above were the following non-residents: diphtheria, 3; tuberculosis, 3.

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The Massachusetts Medical Society.

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Harold C. Ernst, *Chairman*
240 Longwood Avenue, Roxbury
On State and National Legislation
Samuel B. Woodward, *Chairman*
58 Pearl Street, Worcester
On Public Health
Enos H. Bigelow, *Chairman*
P. O. Box 213, Framingham

Utilization of Cripples in Industry.—It has been proposed and resolved to look up for the Suffolk District of the Massachusetts Medical Society, in order to help out reconstruction work, any available data on the present utilization of cripples in industry. I have been asked to take the chairmanship of this committee and take this opportunity, through you, of appealing to the profession for help. It is obviously not practicable to go at this matter statistically.

Our hospitals are not sufficiently far advanced in end-result work to give more than partial help in this matter and there seems to be no obvious way in utilizing industrial data to make anything like a complete survey. What can be done, however, is to accumulate instances of men throughout the Commonwealth who are earning a living in spite of the loss of a limb, stiffening of a joint, or other injury which is ordinarily considered a definite industrial handicap. If we can get enough of these instances we shall at least greatly enlarge our knowledge of trades where these people can be used. I am accordingly making this appeal to the profession of the district to turn in data for further investigation of details and turn them in either to me or to Dr. Hilbert F. Day, 657 Boylston Street, Boston.

(Signed) FREDERIC J. COTTON, M.D.

NOTES FROM THE DISTRICT SOCIETIES.

DISTRICT CORRESPONDENTS.

Bristol North, **ARTHUR R. CRANDELL, M.D., Taunton.**
Berkshire, **A. P. MERRILL, M.D., Pittsfield.**
Bristol South, **EDWIN D. GARDNER, M.D., New Bedford.**
Essex North, **T. N. STONE, M.D., Haverhill.**
Essex South, **H. P. BENNETT, M.D., Lynn.**
Hampden, **LAURENCE D. CHAPIN, M.D., Springfield.**
Hampshire, **E. E. THOMAS, M.D., Northampton.**
Middlesex South, **WILLIAM C. HANSON, M.D., Belmont.**

BERKSHIRE DISTRICT.

ON ACCOUNT OF LACK OF COAL the Berkshire Hills Sanatorium, North Adams, has been closed from January 1 until June 1. Dr. Wallace E. Brown, surgeon in charge, will open an office in New York City.

THE STATE BOARD OF HEALTH is to establish a clinic for venereal diseases for Berkshire County, in Pittsfield, under the direction of Dr. Nathan Finkelstein. Salvarsan can be obtained by the physicians from him free.

DR. JOHN T. BOTTOMLEY gave a very instructive address on "Jaundice" before the District Medical Society recently, and has promised to publish it.

O. L. BARTLETT, M.D., *Reporter.*

Obituary.

ALBERT DEXTER KINGSBURY, M.D.

DR. ALBERT DEXTER KINGSBURY, a retired Fellow of the Massachusetts Medical Society, died of heart disease while visiting a patient, December 26, 1917. He was born in Newton, November 8, 1842, was a student at Amherst when the Civil War broke out, and enlisted in the Thirty-second Massachusetts Volunteers, serving through the War. While acting as clerk in the War Department at the close of the War, he studied medicine and took his M.D. from the Georgetown University School of Medicine in 1869. In 1875 he settled in Needham and joined the Massachusetts Medical Society. He had practised there since. He was a member of the Needham Board of Trade and of the Needham Grange, and he was a deacon of the Congregational Church, and was the first medical examiner appointed for Norfolk County. His widow and one daughter survive him.

EDWIN BOARDMAN ADAMS, M.D.

DR. EDWIN BOARDMAN ADAMS, age 66, died at his home in Springfield, December 21, 1917. He was born in Brunswick, Me., October 20, 1851, the son of Aaron Adams, who was a descendent of the early English settlers. He was educated in the public schools of Brunswick and Bath, Me., and at the college of physicians and surgeons, New York, receiving his M.D. in 1880.

Dr. Adams first went to Boston as a clerk in a wholesale house and then to Springfield in 1874, securing employment with the Hampden Watch Company. He then decided to become a physician, and began his studies under Dr. G. E. Foster, finishing his medical education in New York.

While in New York Dr. Adams was clinical assistant to Dr. Thomas Satterthwaite, but upon leaving the university did not remain in that city, instead returning to Springfield, where he opened an office. In April, 1884, he married Mrs. Ann J. Kent of that city. They had one daughter. He had been a Fellow of the Massachusetts Medical Society since 1887.

Miscellany.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR NOVEMBER, 1917.

General Prevalence.—The total of 6065 cases of communicable diseases reported in November was a considerable increase compared with the October total of 4287. This increase of 1778 cases was confined chiefly to measles, chicken pox, mumps and whooping cough.

There was an increase of 643 cases of measles in November over the October total of 589 cases. Chicken pox reports increased from 263 to 669 cases, mumps from 160 to 361 cases and scarlet fever, 440 to 587 cases.

Anthrax.—Four cases were reported during the month. Three of these were hide handlers in beamhouses and the other case was a dock hand who handled China goat skins.

Lobar Pneumonia.—The reports of this disease increased from 152 cases in October to 290 cases for November. With the exception of pulmonary tuberculosis, lobar pneumonia has the highest death rate of any of the communicable diseases in Massachusetts.

Diphtheria, Chronic Carrier.—An interesting case was the finding of a diphtheria carrier in a school where an outbreak of diphtheria occurred. Successive cultures from the nasal pharynx gave positive cultures for the diphtheria bacillus. The child was put under the care of a rhinologist who, on examination, found a partially decayed cherry stone in the nose. The stage of decomposition of the stone clearly showed that it had been in this position for several months. The stone was removed and all cultures taken since from the nose have been negative. The boy had diphtheria in August, 1916. It is probable that he has been a carrier ever since. In view of the above history it would seem desirable in all cases of chronic diphtheria carriers to make a nasal examination for foreign bodies which may result in clearing the nasal passages of the diphtheria bacillus.

Schick Tests.—This method of definitely ascertaining the individuals in any given group who are susceptible to diphtheria is particularly valuable in institutions where considerable groups of children are assembled. During the past month a few institutions in the Commonwealth have taken the opportunity of obtaining the material necessary for the Schick tests furnished by this Department, and carried out this test on the children in the institutions.

Measles.—This disease appeared in Massachusetts in two districts this autumn. One district is in the southern part of the Connecticut Valley where the disease was centered in Westfield, whence it has spread to the nearby cities and towns. The other district is centered in and about Arlington and Somerville.

Typhoid Fever.—Most of the institutions in this state are now carrying out routine antityphoid and para-typhoid inoculations of the institutional staff. It is advisable to use "triple vaccine," so-called, that is a mixed vaccine prepared from typhoid, paratyphoid A and paratyphoid B bacilli, rather than the straight typhoid vaccine which contains only typhoid bacilli.

Typhoid Fever Carrier.—The Boston Health Department reported an interesting typhoid carrier during the month. The carrier had typhoid fever in June, 1917, and repeated examinations showed that he had bacilluria, typhoid bacilli being found constantly in his urine but none in his faeces. Repeated examinations for a few days showed no bacilli in the urine with the result that he was permitted to go home. Within a month two cases of typhoid fever were reported from his home and examination showed that he still had typhoid bacilli in his urine.

Diseases on the Premises of Milk Handlers.—Four cases of communicable disease occurred on the premises of milk dealers, two of these being diphtheria on farms, one case of scarlet fever in a milk handler, and one case of poliomyelitis on a farm. No secondary cases followed these cases, so far as known.

EPIDEMICS AND OUTBREAKS.

Diphtheria in Amesbury.—There were 41 cases reported in this town during November. Investigation showed the outbreak to be among children of school age, but not centered in any particular school. Extensive culturing of school children has been carried out by the school physician, and the outbreak shows signs of abating.

Diphtheria in North Attleboro.—In this town there were 33 cases in October and 18 in November, nearly all among the children attending one school. In November members of the local board of health and school physicians, assisted by the State District Health Officer, carried out a detailed culturing and immunization of patients, suspected cases and school children, with the result that the outbreak has been checked. Many of the cases were of a mild nasal type and would have escaped notice unless nose and throat cultures had been taken.

Diphtheria in Baldwinsville.—There were six cases reported from the Hospital Cottage for Children, Baldwinsville. The outbreak started in a nurse who was taken sick and five cases followed in children in contact with her. Immediate culturing of the whole institution and isolation of the cases by the institutional authorities stopped the outbreak.

Scarlet Fever in Montague.—An outbreak of nine cases occurred in Turners Falls Village, Montague, in November. The disease has been constantly present in this town for the past year and, when given the opportunity, flares up, so that careful investigation and public health work will be necessary to locate the centers from which the infection is spread.

Measles in Chesterfield.—In this town an outbreak of 40 cases was reported in November. This outbreak started during the last few days in October when four cases were reported. Investigation showed that the first case was a nineteen-year-old patient who arrived home in Chesterfield from a visit in Boston, and the second case was a girl who worked with the previous case. The cases immediately following were sister and brothers of this second case, and from these the school outbreak resulted.

RARE DISEASES.

Actinomycosis was reported from Danvers 1, and Westwood 1.

Anterior Poliomyelitis was reported from Boston 1, Cheshire 1, Lowell 2, Ludlow 1, Lynn 2, Needham 1, Somerset 1, and Springfield 1.

Anthrax was reported from Boston 1, and Woburn 3.

Dog-bite was reported from Boston 2, Brockton 1, and Holyoke 1.

Dysentery was reported from Barnstable 3.

Epidemic Cerebrospinal Meningitis was reported from Arlington 1, Boston 5, Brookline 1, Fall River 3, Lowell 1, Northampton 1, Salem 1, Springfield 1, Wilbraham 1, and Worcester 1.

Malaria was reported from Brockton 1 and Sutton 1.

Pellagra was reported from Northampton 1.

Septic Sore Throat was reported from Boston 1, Brookline 1, Chicopee 1, Haverhill 1, Lowell 1, Medford 1, Melrose 1, and Newburyport 3.

Smallpox was reported from Boston 1.

Tetanus was reported from Gardner 1, New Bedford 1, Sterling 1, Westfield 1 and Worcester 1.

Trachoma was reported from Boston 7, Chelsea 1, and Wakefield 1.

Correspondence.

ALCOHOL IN MEDICINE.

76 Marlborough Street, Boston,
December 28, 1917.

Mr. Editor:—

The leading editorial in the December 27th issue of the Journal begins with the sweeping statement that "No one now doubts the value of alcohol in medicine, and its loss would be almost irreparable," which is not borne out by the recent resolution of the American Medical Association as follows: "Whereas, we believe the use of alcohol is detrimental to the human economy, and whereas, its use in therapeutics as a tonic or stimulant for food has no scientific value; therefore, be it resolved that the American Medical Association is opposed to the use of alcohol as a beverage, and be it further resolved, that the use of alcohol as a therapeutic agent should be further discouraged."

Exceptions could also be taken to several other statements in the editorial.

Yours truly,
Charles W. Townsend, M.D.

SUGAR AND SERVICE.

Warwick, Mass., Dec. 27, 1917.

Mr. Editor:—

Sugar is generally classed as a food but how well it serves under that classification may be open to question. It is not easy to define a food. A food as a fuel affords heat and energy to the body and in a more complex way furnishes material for body growth and repair. Gasoline and kerosene are inflammable liquids, but are not thought of as fuels in the way that wood and coal are. When these oils are used as fuel, very special device and precaution must be employed to make them serviceable and safe. "Sugar is a sweet substance obtained from many vegetable juices, but principally from the juice of sugar cane," and from sugar-beet. This substance is capable of oxidation and hence has a fuel or food value. The virtue of sugar as a food is more or less dependent upon the way it is taken into the body, or how it is yielded up to be digested and absorbed.

The teeth, the glands, and muscles of the digestive tract perform offices which extract the juices, the starches, the sugars from fruits and vegetables. The cellular fibrous envelope holding these elements excites this functioning in a normal way and prevents the too rapid yielding up of this cell juice. This is Nature's way for allowing gradual absorption of food throughout that long digestive tract. The fiber of the cane and beet may be a little too tough and unwieldy for the digestive apparatus of civilized man. He has developed an industry for artificially extracting sugar. He has found this commercially profitable and has secured a product more "portable"—performed, in effect, a seemingly economic service. "Trade" has been interested in having sugar accepted as a food and perhaps unwittingly it has been. The race has been coaxed and educated to its use and a taste and craving for it have developed. Little, if any, general thought has ever been given to the limitation of its use in ordinary diet. A study of the consumption of sugar (refined) three years ago, shows that the United States and England used *per capita* nearly twice as much as France and Germany and six or eight times as much as Italy and Spain. The latter countries can, of course, get sugar in fruits in the natural way.

If oils must be carefully gauged when used as fuel, why should not foods be likewise? Nature has stored this precious fuel in innumerable small chambers from which it is slowly and carefully extracted by muscular and glandular processes of the mouth, stomach and intestine, and these processes are only partly subject to conscious effort. The delicate membranous linings of these parts were hardly intended for receiving directly such quantities of sugars and sirups as candy, sweet coffee and rich cakes throw on to them. Such abuse has its large place in developing chronic troubles all the way from adenoids to constipation. Acute irritation of the throat may easily be experienced by comparing how the throat feels after eating a natural food at one time with that after taking artificial extract at another. Other conditions being normal, when one eats an apple at bedtime, the throat in the morning will feel cleaner and less dry than if candy or sugar has been eaten.

Now, since greed and lust have precipitated war, and hate and jealousy flow so as to produce national adenoids here and industrial constipation there, it is well to consider seriously where artifice defeats the wholesome ends of life. Self-sacrifice is noble, but enforced denial of the sweets may help us to appreciate our native powers for digestion and assimilation of what is meat and drink to life, material and spiritual. Paul W. Goldsbury, M.D.

RECENT DEATHS.

Dr. Albert D. Kingsbury of Needham died suddenly while attending to his medical practice in that town. Dr. Kingsbury was seventy-five years of age and had practised in Needham for nearly fifty years. He was born at Oak Hill, Newton, and was a graduate of Amherst College. Dr. Kingsbury was also a veteran of the Civil War. He leaves a widow and one daughter.

Dr. Everett J. McKnight of Hartford, Conn., at one time president of the Connecticut Medical Society, died at his home on December 25. His death was hastened by overwork in connection with the draft registration. Dr. McKnight was born in Illington in 1855, and graduated from Yale in 1876.

SOCIETY NOTICES.

Combined Meeting Boston Medical Library and Suffolk District Medical Society.—A meeting will be held at the Boston Medical Library on Wednesday evening January 16th, at 8. 15 o'clock.

Dr. Alonzo Taylor, of Washington, D.C., will speak on some aspect of food values. Dr. Taylor has been in Germany since the war, working in the prison camps. The exact title of his address will be announced later. Gilbert Smith,
Sec'y, Suffolk Dist. Med. Soc.

Worcester District Medical Society.—Regular meeting, Wednesday, Jan. 9, 1918, at 4.15 p.m., in G. A. R. Hall, 55 Pearl Street, Worcester.

Continuing the subject of "Child Welfare as a War Measure," address by Dr. Robert L. De Normandie, Assistant Obstetrician at Boston Lying-in Hospital, and Assistant in Obstetrics, Harvard Medical School, on "Pre-Natal Care," with particular reference to organization of such work in large communities.

Dr. De Normandie has recently returned from Halifax and will also tell us something of the disaster and the relief work, illustrating by photographs or lantern-slides as he is able.

The Boston Medical and Surgical Journal

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Address.

THE X-RAYS IN PHTHISIS.*

BY GEORGE W. HOLMES, M.D., BOSTON,

Roentgenologist, Massachusetts General Hospital.

THE roentgen examination of the lungs should be used perhaps much more often than is at present being done, as a supplement to the physical examination of the chest. It should never be used as the sole means of diagnosis.

An opinion based upon roentgen evidence alone is of about the same value as an opinion based upon the physical findings alone. Without a careful history, both lose much of their worth; combined with the other evidence, however, it may be of great value, as without doubt it is capable of revealing changes in the lungs which cannot be demonstrated by any other method.

In difficult cases, or cases where the physical signs are absent, it may be the confirmatory evidence upon which a correct diagnosis is made, and in certain well-defined cases it may give a more accurate picture of the extent and distribution of the process, and in this way aid in the prognosis and treatment of the case.

Unfortunately, very few roentgenologists are well-trained clinicians. It is perhaps equally unfortunate that few clinicians have a working knowledge of the interpretation of roentgen findings.

Wherever the data obtained by both methods have been combined, either by coöperation between the roentgenologist and the clinician, or even their combined use by a single investigator, better results have been obtained.

THE ROENTGEN ANATOMY.

The lung, as seen on the roentgen plate or fluoroscopic screen, presents the following shadows. The hilus and peribronchial shadow, the linear markings, and the dark background of the alveolar structure.

The hilus shadow is composed of the larger bronchi, the great vessels, lymphatic and fibrous tissue, and the peribronchial glands.

The tracheal glands lie behind the shadow of the great vessels and are not visible except when they are much enlarged and calcified. They may be seen in the lateral views.

The glandular shadows are distributed along the course of the bronchi, and may vary from rather fuzzy, indistinct shadows to the dense white patches of calcification.

The linear markings are composed of the arteries, the bronchi, with their surrounding connective tissue, and the lymphatics and lymphoid tissue of the lungs. Changes in the linear markings are due either to changes in the tissue around the bronchi, or, as is more often the case, to changes in the lymphoid tissue. The arteries of the lungs are not subject to change.

The veins are situated midway between the branches of the bronchi, and are not included in the linear shadow.

A pathological process in the lung structure tends to produce changes in the lymphatics draining the infected area. Therefore, we

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* Read before the Framingham Medical Club and the Community Health Station, September 20, 1917.

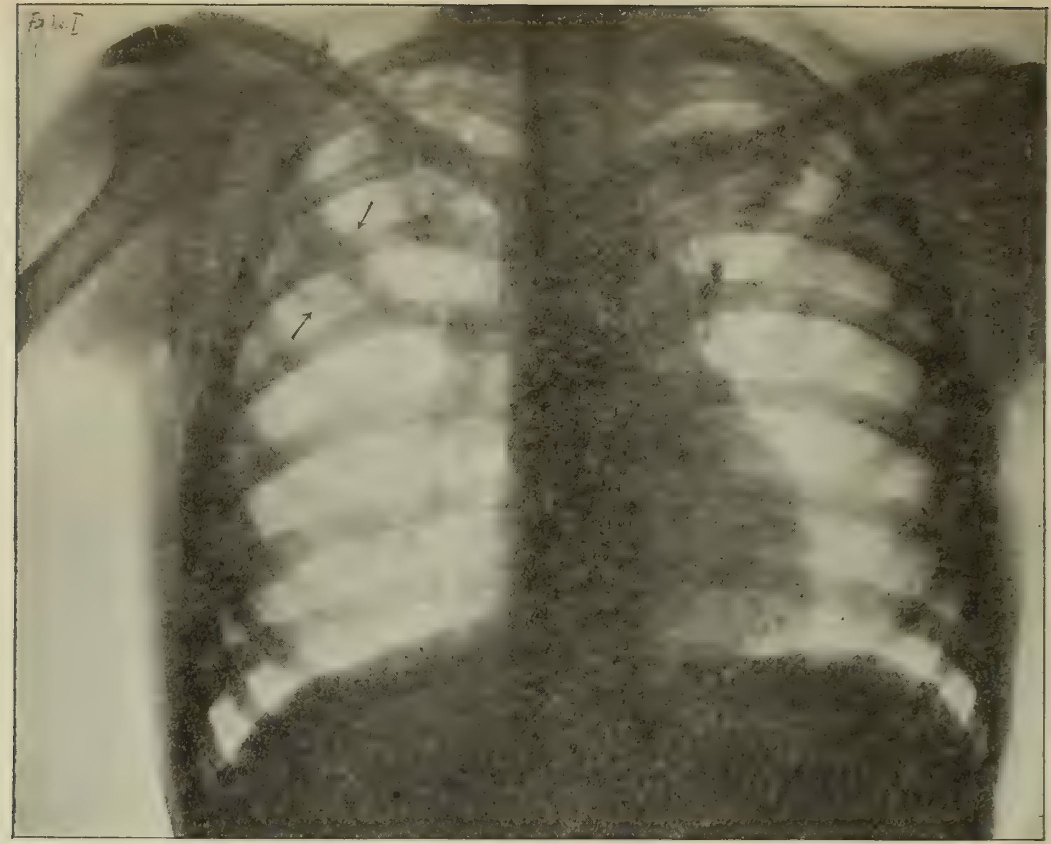

FIG. 1.—A fairly typical case of tuberculosis of both apices. In the area between the arrows on the right is seen a fan-shaped area of mottled dulness, with thickened linear markings running from it to the hilus of the lung.

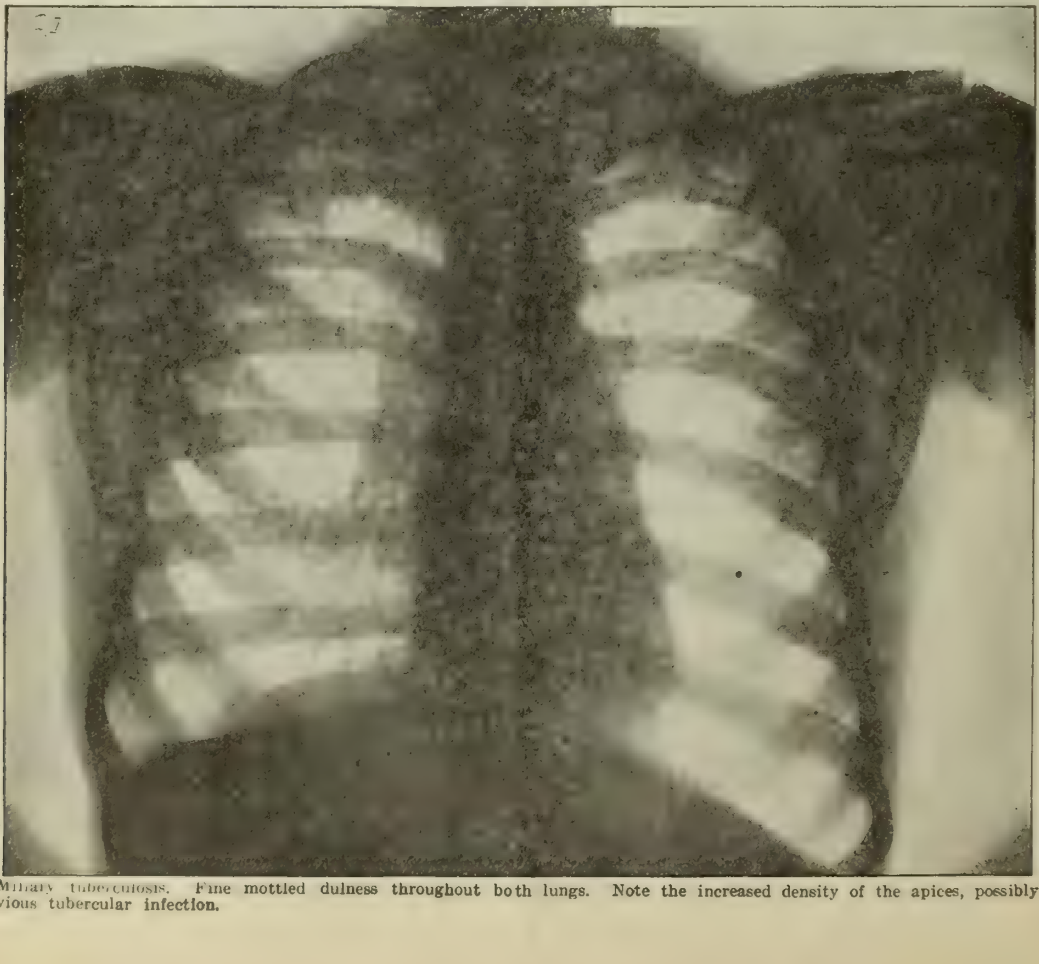

FIG. 2.—Miliary tuberculosis. Fine mottled dulness throughout both lungs. Note the increased density of the apices, possibly due to a previous tubercular infection.

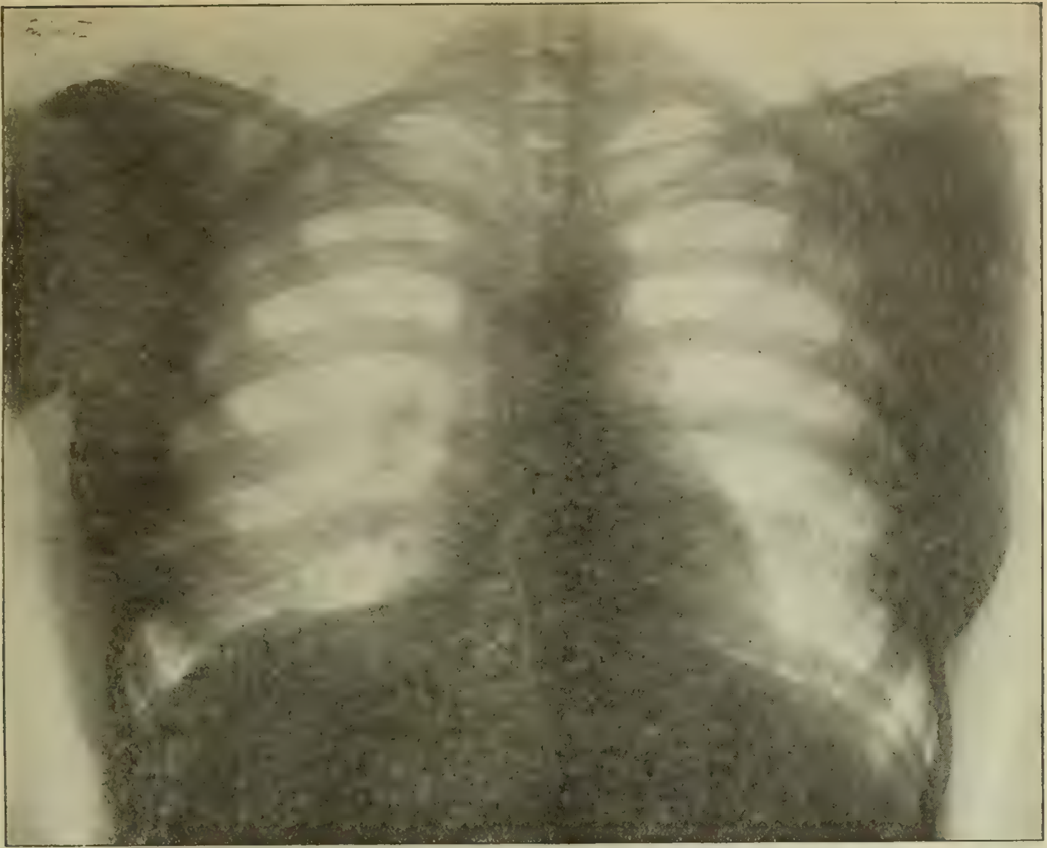

FIG. 3.—About one year after this plate was taken the patient was in one of our state hospitals for advanced cases. The thickening about the hilus of the lung and along the lesser bronchi probably represents a peribronchial tuberculosis.

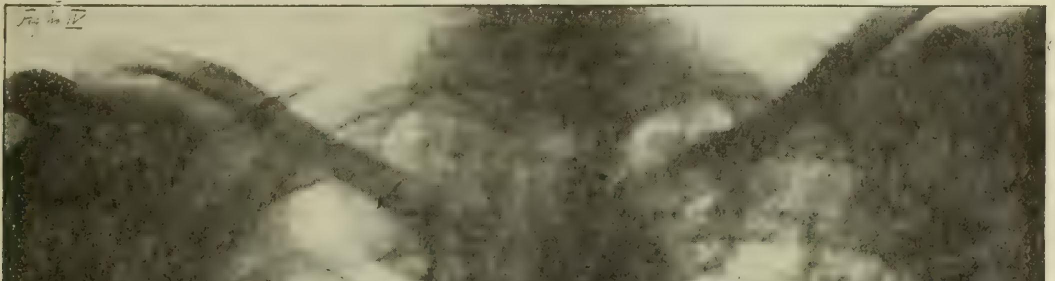

FIG. 4.—Advanced tuberculosis involving the apices of both lungs, with a large cavity below the clavicle on the right.

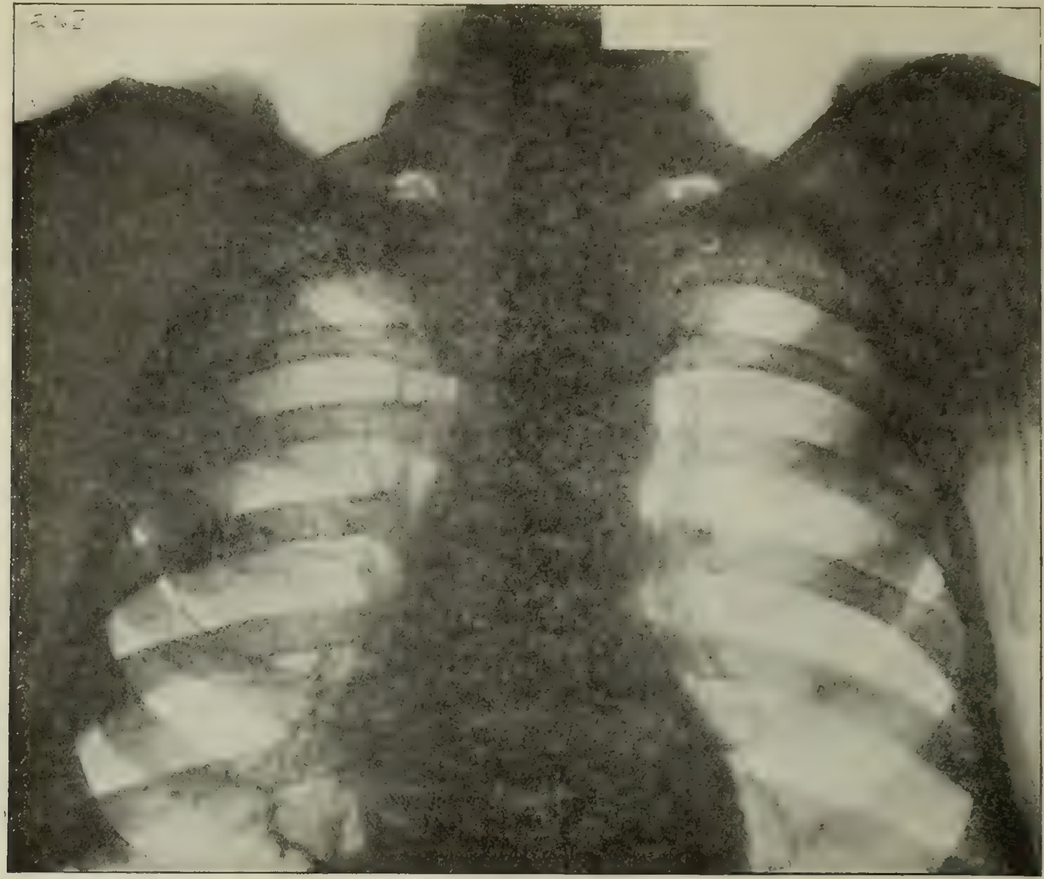

Fig. 5.—The fine, even mottling throughout both lungs seen in this plate was due to deposit of marble dust. (Marble-marker's disease.)

should expect to find a shadow in the lung substance representing the site of the pathological process, and a fan-shaped area of thickened linear markings representing the course of the lymph channels draining this area. The peribronchial glands in the infected area may also show changes.

All the lymph vessels of the lung tend to converge towards the hilus, excepting a small group near the periphery which drains into the pleura.

ROENTGEN FINDINGS WHICH ARE OF VALUE IN MAKING A DIAGNOSIS OF TUBERCULOSIS.

These may be divided into three distinct types,—miliary, peribronchial, and parenchymal. The third is the most common type, and is seen as an insulated group of small white areas, usually near the periphery of the lung, from which spreads a fan-shaped area of thickened linear markings which extend toward the hilus. Thickened and mottled markings in the region of the bronchi may be seen; also large dense and, possibly, calcified peribronchial glands. As the process increases and these areas become larger the shadows overlap and the typical fan shape is lost.

Other infections of the lungs present a similar picture, but this is not true of other chronic processes. Stereoscopic plates are of great value in diagnosing the early cases of this type, as it is of special importance that the position of the group of small areas of increased density, which represent a group of tubercles, be accurately located. If it can be stated that these shadows are in the periphery of the lungs, great weight should be placed upon their presence. If, however, they are along the bronchi, the process may be only glandular.

MILIARY TUBERCULOSIS.

In miliary tuberculosis the picture is quite characteristic: Fine, discrete, dense spots are seen scattered evenly over the greater part of the lung field. There may also be evidence of a chronic lesion in one or both apices.

It is well known that these cases may show very little evidence on the physical examination. This is particularly true in the examination of children. Special care must be taken in the examination of this class of cases to obtain plates in which there is no movement. It is possible by movement to obliterate entirely the shadows of the tubercles, and to have the plate present the appearance of a normal lung.

PERIBRONCHIAL.

This type of lesion is very difficult to diagnose, as far as the x-ray is concerned. The findings are a general thickening of the linear

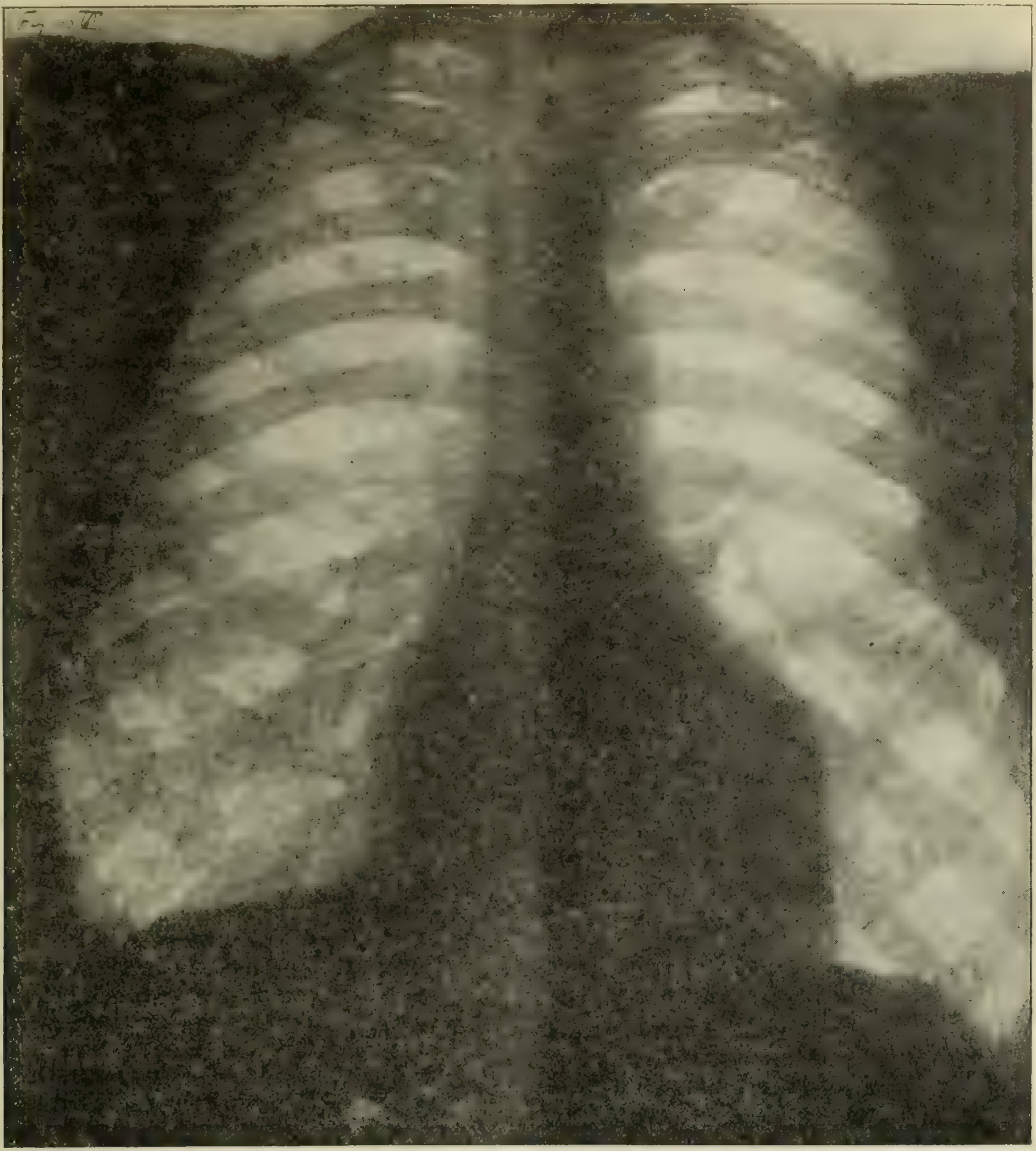

Fig. 6—This radiogram was taken of the chest of a patient who worked as a potter many years. He showed absolutely no sign of tubercular infection. Note that the mottling is most marked in the lower parts of the lung fields.

markings in the region of the bronchi, with marked changes in the peribronchial glands.

These changes should be sharply defined, and the density should be well marked. The appearance is very similar to that seen in non-tubercular infection, and to mediastic carcinoma.

The differential diagnosis must depend usually upon the history.

THE ATYPICAL LESIONS.

(Lesions simulating tuberculosis.)

The changes in the lungs which are most difficult of differentiation from tuberculosis are dusty lungs, syphilis, rare forms of malignancy, and acute infections which are peribronchial in type.

Dusty lungs simulate very closely miliary tuberculosis and cannot be differentiated from it by the x-ray. A glance at the patient and a brief outline of the history are usually sufficient, however.

Syphilis of the lung is not well understood. Some types are fairly characteristic, namely, a large involvement of one lung without infection of the other, which condition is not usually seen in tuberculosis.

The acute infections which simulate tuberculosis are differentiated usually on the history, and by repeated examinations. There is, however, a difference in the characteristic roentgen picture. In acute infections, the changes are most evident around the larger bronchi, and are less sharply defined; calcification may not be present, and the periphery of the lung is not involved.

THE METHODS OF EXAMINATION.

The examination of the chest divides itself directly into two principal methods,—fluoroscopy and radiography.

The study of the chest with the fluoroscope has the advantage of being cheaper, both as to individual cost and as to equipment. It is also more easily and quickly done. The image seen upon the screen is that of the living, moving organs and it gives data whch could not be obtained from the photographic plate, such as the movements of the diaphragm, lighting up of the lung fields during respiration, the pulsation of the different chambers of the heart and possible changes in the shape of dull areas in the lungs during change of position of the patient.

Its disadvantages are the inability to study carefully the detailed structure of the lungs, and the fact that it does not give us a permanent record, that is, those interested in the case must rely on the personal judgment of the radiologist, whereas, with the plate, a joint study is possible.

The radiographic method has the advantage of giving an accurate, permanent record of the condition within the chest, and should show any variation from the normal which gives rise to change in density, either diminished or increased. Sufficient data may be obtained from a single plate, or it may be necessary to take plates from the front and back, upright or prone, and in a considerable percentage of cases stereoscopic plates should be taken. The number and position of the plates to be taken can usually be decided upon at the fluoroscopic observation. Without the fluoroscopic observation it is necessary to take at least three plates, two of which should be a stereoscopic pair.

The ideal procedure, as it seems to me, should be a fluoroscopic observation, at which time definite records are made as to the excursion of the diaphragm, changes in shape of any abnormal shadow in reference to respiration and position, also to the illumination of the lung fields during respiration and coughing. If, at the end of this examination, the diagnosis is in doubt or it appears to be negative, stereoscopic plates with the patient in the sitting position and the tube behind, should be taken. Should the fluoroscopic findings be fairly definite, a single plate taken in the position which best shows the pathological process will be sufficient.

Original Articles.

OBSTETRICS.*

BY ROBERT L. DENORMANDIE, M.D., BOSTON.

THERE has been throughout this country in the past few years a very definite awakening to the need for better obstetrics. This need is widespread, insistent and very real. The federal government recognizes it by its work through the Children's Bureau. The State recognizes it by the activities of its Board of Health (Division of Hygiene). This department has just had printed a series of letters designed to reach the women of the state who are pregnant but without medical attendance. The medical schools are, by this publicity for improved obstetric care, being forced to give better courses in obstetrics, and it is only this year that the Harvard Medical School demands twelve cases for a degree when previously it has been six.

Tonight I mean to go over the conduct of an obstetric case and point out some of the essential points in its management in such a way that it cannot be said of us that we are doing in this part of the country poor obstetrics; that we are not looking after our women and infants at least as well as any other community.

I take it better obstetrics means that we must lower the existing mortality and morbidity among mothers and infants; that each and every pregnancy must go through to successful issue so that the mother returns a useful member of her community and that the baby is alive and with no disabilities. That there is a large mortality and morbidity in obstetrics must be admitted by all, if we consult the vital statistics. That this mortality rate is as high as it really honestly should be is doubtful if we are to believe Dr. Perry's findings of his investigations in Fall River, where "in thirty-four cases in which death was immediately and indisputably the direct consequence either of parturition or of its gross mismanagement, the death record contained not the slightest intimation that pregnancy or childbirth had been in any way the cause or even a contributory cause of death."

The whole object of prenatal care is to carry along the pregnant woman with as little discomfort, with as little danger as is possible until she is delivered and up and about again. Intelligent prenatal care is essential. The bad results that we constantly hear of are usually because of the lack of prenatal care. The accidents of pregnancy and labor it will not prevent, but it will tend to minimize them.

It is not necessary here to go into all the details of what intelligent prenatal care means; you all know it well. There are certain neglected points, however, that I do wish to speak of.

The majority of pregnant women do not think it necessary to see a physician until the third or fourth month or later. They regard their pregnancy as a natural phenomenon and have not the knowledge of what can be done to help further their safety and that of their baby.

A physical examination early in pregnancy should be made in order to establish for the patient what her standard is. If this were done by all physicians how many damaged hearts would be found and safeguarded, early kidney complications found and alleviated and, if necessary, an early abortion done. The blood pressure determination, so easily done and of such value, found to be normal at the beginning of a pregnancy, is of the greatest help should it rise in the latter months. The general hygiene of pregnancy must be gone into with each patient in detail. No hurried office visit is sufficient to give what advice is due, and the right, for each and every pregnant woman.

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* Read by invitation at the Massachusetts Medical Society, Middlesex East District, October 17, 1917.

A vaginal examination is necessary on all pregnant cases as soon as they present themselves to you for care. A pelvic tumor, a retroverted uterus, or an extrauterine may be found, and these conditions are not so rare as to assume they will not occur. Each calls for its own proper treatment. It is true that some retroverted uteri right themselves with no treatment and others become incarcerated with all the train of symptoms that follow this complication. A vaginal examination will usually tell which ones will go up without difficulty and which will not. The determining factor is the relation of the cervix to the symphysis. Where the cervix is high in the pelvis, just at, or behind, the symphysis, and the fundus in complete retroversion, in these cases one must expect that incarceration will follow the growth of the fundus; but when the cervix is low and as the fundus enlarges it (the cervix) is pushed against the lower border of the symphysis, the fundus gradually swings up, the cervix being held at the symphysis. The sooner the first type of retroversion is corrected and a pessary inserted to hold the uterus in position until it cannot fall back, the better. The second type is watched and practically always goes up of itself, or possibly the only necessary advice is for the patient to assume the knee-chest position morning and night and while in that position to take six or eight long breaths.

A cause of miscarriage not always recognized and not in many instances sufficiently guarded against is coitus. Intercourse at what would be a normal period were the patient not pregnant is a very common cause for miscarriages. That in many cases intercourse has no effect on the pregnancy must be a fact, but because of the number of miscarriages I have seen as the direct result of intercourse, I now always advise my patients to avoid intercourse at these more dangerous times.

With the first visit over, and the patient's general condition known and the pelvic condition normal, the ante-partum care necessary for the remainder of the pregnancy consists in keeping the patient in the best of physical condition. The old saying that a sick pregnancy is a safe one cannot be subscribed to. The pregnant patient must be at all times well. She will have discomfort that is unavoidable, but if anything develops to make her feel below her normal wellbeing, she must report at once her symptoms to her physician. This failure to report early symptoms is the one cause of more disasters in obstetrics than anything else. The reason that symptoms are not reported early, I believe, lies primarily with the physicians themselves, for they do not impress their patients with sufficient force the need for this. It is my custom after the first visit to see the patients once a month and to have a specimen of urine once a month, the patient coming the first and the urine the fifteenth of the month. This arrangement holds until the seventh month when the urine is seen regularly once a week or ten days and the patient about once in two or three weeks.

With the urine normal and the blood pressure staying down under 130 mm. of Hg. there is no danger that a toxaemia of pregnancy is present. A toxaemia may develop over night, but these fulminating types are so rare and when they come so overwhelming, that the physician can hardly be held responsible for the bad outcome of these cases.

It is the other type of toxaemia of pregnancy, the ultimate outcome of which, when bad, brings the physician into so much disrepute. I mean the cases which develop between the visits to the physician. They usually are of many, or at least, several days' duration. The symptoms are all too well known for me to rehearse, Though the symptoms are known when they come, one after another, the minor signals are disregarded—efficient treatment is held off—hoping that half-hearted efforts will carry the patient along sufficiently well. The symptoms accumulate, the convulsion comes and then everyone wants something done. The time to have been active was days before when efficient treatment would have successfully warded off the eclampsia for which, in many cases, the physician must be held directly responsible.

Any physician may have case after case of toxaemia of pregnancy develop in his practice and no blame can be attached to him, but any physician who has several cases of eclampsia develop lays himself open to much criticism. When this happens, he either is not looking after his cases closely enough or he has failed to impress the patients with the need of reporting their slight ills to him early. I appreciate the difficulties of making patients report as they are requested to and I also know that patients more and more are appreciating that when an eclampsia occurs there not infrequently is cause to complain.

I do not wish to give the impression that every eclamptic means neglect. That is not so, but I do mean that many follow gross neglect. A case I saw recently will perhaps explain clearly my meaning. A primigravida twenty-four years of age developed oedema of face some three weeks before; her urine showed a large trace of albumen; her blood pressure was 160. With efficient treatment, the most efficient I have ever seen outside a hospital, of catharsis, diuresis and diaphoresis, she improved steadily up to three or four days before I saw her, when she remained stationary,—slight facial oedema, a slight trace of albumen and blood pressure 140. The question arose whether to continue the treatment or to induce labor, and I was asked to decide. She was within ten days of full term; she had a large baby with the head settling well into the brim of the pelvis. The oedema was slight of face and hands and none of the legs. She was clear mentally, had no headache, no eye symptoms and no epigastric pain. The blood pressure was 138 and the urine showed a slight trace of albumen but no casts were seen. I unhesitatingly said not to induce labor, but we carefully explained to the husband the danger that was present and told him that if any untoward symptom developed we would advise delivery. He appreciated the danger his wife was in. She started in labor twenty-four hours after I saw her and was delivered by an easy low forceps.

It is one thing to have an eclampsia develop in spite of efficient treatment; that at the present time no one always can prevent, but this is not the class that I object to. It is the patient that shows symptoms and no efficient treatment is begun that I am pleading for. At the present time elimination gives the best results in the toxaemias, but elimination cannot be obtained without efficient treatment and what that means is not necessary for me to enter upon tonight. One thing further in a toxic case, let me add; after the patient is delivered take the blood pressure every four hours until you are positive the reading is going to stay low. This one simple procedure will do much to safeguard your patient.

As we go on in the pregnancy the complication of hemorrhage becomes more common, but it must not be inferred from this statement that hemorrhage occurs only in the latter part of pregnancy. Bleeding may occur at any time and it must always be held a serious complication that calls for the best obstetric judgment. The mortality rate in bleeding cases is much too high and the responsibility, I believe, is about equally divided between patient and physician. As in the toxaemia, so here in bleeding cases, the first early symptoms are made light of. A show of blood, no matter how slight, in a pregnant woman, must be regarded as abnormal and demanding immediate attention. Delay oftentimes is fatal. Not infrequently a patient in the last months of pregnancy has a severe hemorrhage and by the time a physician arrives it has stopped or is stopping. Then a vaginal examination is made and bleeding starts up again, and not uncommonly more severe than at the first bleeding. It is fair to assume that bleeding in the last months is probably from some type of a placenta praevia, and you must determine in each specific individual case whether an immediate vaginal examination is the indicated procedure. My feeling is that many times a vaginal examination, unless you are prepared to meet the hemorrhage that sometimes follows, is inadvisable. A case will explain my point.

A patient had had a severe hemorrhage before she was seen. The bleeding had ceased almost entirely. The physician made a vaginal examination and started a severe hemorrhage, so severe that he thought it necessary to dilate the patient and deliver her. This he did, although he was totally unprepared for such an operation. Inside of an hour the patient was dead.

From such a case there are two points to learn,—be careful about vaginal examinations in bleeding cases, and if you determine to make a vaginal, be ready to meet the possible severe hemorrhage. That further means keep away from the os uteri and make your diagnosis, if possible, by palpation through the culs-de-sac; and still again, make no examination if the bleeding has ceased, or is stopping, until you are fully prepared to meet the emergency.

In hospital work we constantly see cases that have been bleeding for days and one especially flagrant case of neglect I recall. The physician had correctly diagnosed a placenta praevia and then elected to leave the patient at her own home without a nurse. Bleeding continued and a second hemorrhage occurred and she was sent to the hospital by him in a very dangerous condition and later he näively said he kept her at home because he had planned to take her to a private hospital and there do a Caesarean section on her! But the second hemorrhage was so severe that he decided the Lying-in Hospital should assume the grave risk rather than he!

As the patient approaches full term, the problem of the relative size of the baby to the mother's pelvis arises. This problem is present always in every primigravida and in any multigravida with a previous history of difficult labors or when the baby in the present pregnancy is obviously much larger than in previous pregnancies.

Much has been written of the necessity of measuring the patient's pelvis previous to labor. It unquestionably should be done, for it is a guide, but that one can settle absolutely whether this or that baby can come through by measurements alone I do not believe. Much more reliable than measurements alone is palpation of the fetus and the relation of its head to the pelvic inlet. The more proficient the physician is in palpation, the less does he rely upon the measurements. If, before labor, by palpation the head is well down in the pelvis, there is no worry about the inlet of the pelvis, but if the head in a primigravida is high, it is necessary to do all we can to determine whether the head will come through the inlet or not.

Of course in many cases the head can be forced readily into the pelvis, even if it is found to be high, but these are not the troublesome cases. Where the head is high and the question of disproportion—of overriding the symphysis—is present, how best can we answer that question? Place the patient on her back in the dorsal position and make a vaginal examination. Palpate the contour of the pelvis and try to reach the promontory of the sacrum. Then, after the pelvis has been explored with the two fingers of the left hand in the vagina, swing the thumb of this same left hand up over the symphysis and with the right hand grasp the fetal head and try to push it into the pelvis.

The fingers feel the descending head, if it will come down; the thumb feels the overriding at the symphysis, if it is there, and if it is not, then it readily makes out the sulcas, if there is no disproportion. In many cases the head stays high and by these manoeuvres cannot be pushed into the pelvis. Then if added pressure is made at the fundus, not infrequently can the head be pushed down to the lower border of the symphysis and it then is fair to say that there is no real disproportion.

The inlet of the pelvis is more commonly the seat of contraction than the outlet, but the outlet is contracted often enough to demand careful examination in all primiparae. Not all physicians carry with them the little outlet pelvimeter, but every physician has a fist which can always take the place of such a pelvimeter. The patient is still in the dorsal position; the closed fist is placed between the ischial tuberosities and with a gentle rocking motion, a very excellent idea whether the outlet is contracted or not can be obtained. This, combined with palpation of the pubic arch, gives the information we seek with great accuracy after very little practice.

In by far the majority of cases we find no disproportion between the baby and the pelvis, and our examinations simply make us doubly sure all is well. In a small proportion, the disproportion is so marked that the treatment is very clear and a Caesarean is done on an elected date. But there is the doubtful, the border-line, case where it is impossible honestly to say before labor begins what is the right treatment. It is in these doubtful cases that Caesarean sections are being done so frequently. In many cases I do not doubt but rightly, but in not a few cases unnecessarily. We can measure the pelvis, we can palpate the fetus, we can etherize the patient and try to estimate the disproportion, if it exists, but we cannot tell what labor will do to the fetal head unless we are willing to allow these patients, the border-line ones, to have the test of labor. By test of labor, I do not mean a couple of hours of inefficient pains, but six or eight hours of good labor. The risk of doing a Caesarean section after six hours of labor with no vaginal examinations is not great, and the good such a test does many times is worth the wait. I do not wish to give the idea that I am advising against the Caesarean. That I am not, except in the unnecessary case. A Caesarean is a simple procedure but it is a major operation and carries a definite mortality in the hands of even the best men, and when anything goes wrong in the technic, death usually follows. Operators are apt to say that the mortality rate in a Caesarean *should* be about 1-2%. That, in my opinion, is not the right way to put it. Each operator, when he advises a Caesarean, should state, when asked, what the risk is, what his own mortality rate is, not what a good series of collected cases show. This craze that is at the present time sweeping over the country for Caesarean section is entirely unwarranted, and I am confident that soon we shall see the pendulum swing the other way. This advice that all primiparous breeches, posterior positions or what not be subjected to a Caesarean section is not justifiable and I am sure it is not good obstetrics. In another class of cases, where the delivery the first time was difficult, many are here again advising Caesarean in the future pregnancies. A case that came to my care last year will show you what I mean.

Some two or three years before, this patient was delivered by a difficult forceps operation of a baby that lived, and did well. Before the operator left this patient he told the husband that if his wife were ever again pregnant she would have to have a Caesarean. Last year she again went to this obstetrician and he set a date for the Caesarean, but the patient objected and said she would not have it unless it were absolutely necessary. To make a long controversy short, she left her first physician and came to me. When I first saw her, two months before the expected date of the Caesarean, she had a small baby with the head even at that time unusually low in the pelvis. As term approached, there was no obvious disproportion present and I determined to let her go into labor, reserving a Caesarean if it proved necessary. She delivered herself two weeks after the appointed date for the Caesarean after a short labor.

The first hard delivery made us watch her closely; but why subject a young girl to a Caesarean and to repeated Caesareans unless the indication is real, not fanciful? This case is not an unusual story and it is happening constantly, and unless we are willing to allow some of our patients to go into labor, Caesareans of course will be the order of the day.

In primigravidae where the head stays up high, the possibility of a Caesarean must be kept in mind, but it must be remembered that a Caesarean section late in labor carries a very high mortality and ought not to be done. Few obstetricians will take this added risk; many surgeons, however, will. Some patients get well after a stormy convalescence, but many die,—and these are not reported.

If the ante-partum examination is complete and thorough, when labor begins, watchfulness is the keynote of success. Any deviation from what is normal means speedy investigation as to the cause. Change in the type of contractions, the rate and strength, their prolongation, their undue painfulness, or their inefficiency, must be noted at once. Unless physicians note these characteristics, good obstetrics cannot be done. Normal labor is characteristically one of progress, and if progress does not take place, then we must find out why it does not. Palpation will show the descent and flexion of the head, and when the head cannot be felt from above, the advance of the head may then be followed by the resistance behind the anus. The characteristic change from first to second stage pains and the increasing show which usually occurs, all point that progress is satisfactory. When such a condition is present, when the ante-partum examination shows that the presenting part is in the pelvis, then vaginal examinations in labor should be done away with or only one, or at most, two, should be made under the strictest aseptic precautions.

Recently, much has been said of rectal examinations instead of vaginal examinations in labor. Many patients complain that they are more painful and in some cases, especially when there are hemorrhoids present, they ought not to be used. I find rectal examinations are a great help in following the advance that is being made, especially so when the advance is slow and one wishes to avoid repeated vaginal examinations.

By watching the action of the uterus, we know whether it is tiring or whether it is becoming tumultuous or whether it is beginning to be boardlike. If the normal contractions and relaxations do not take place, we may be sure some complication is arising. If we neglect to note this change from normal, not infrequently a difficult operative delivery is forced upon us later when early interference would have been relatively easy. One of the first signs of a separation of the placenta is the change from normal in the feel of the uterus. It loses its soft relaxations and becomes hard and boardlike and exquisitely tender. In beginning contraction rings, the lower uterine segment becomes tender and the normal relaxation is absent. A tired-out uterus may have few and very inefficient contractions. These few examples are enough to show the importance of watching the action of the uterus constantly. Hand in hand with this, goes listening to the fetal heart; and it is astonishing how careless many physicians are about this aid to the child's condition. At the beginning of labor there seldom is any interference with the fetal circulation, but after the second stage starts or after the membranes rupture, the danger to the child begins. The fetal heart must be watched constantly if we are to protect the fetus.

With the birth of the baby many physicians feel that all danger and anxiety for the outcome is over, but I cannot feel safe until the third stage is successfully completed. More post-partum hemorrhages occur as the result of a badly managed third stage than any other single cause. The placenta may separate in a very few minutes and come down into the vagina. Then, of course, no damage is caused if it is at once expelled, but if it does not separate at once, be in no hurry,—it is time well spent to allow it to separate normally. There can be no set time when to expel it or no set number of contractions to wait for. The point to be remembered is that, if there is no bleeding and the uterus acts well, separation must occur before expulsion is attempted. But if bleeding takes place, then the uterus should be emptied carefully by Credéing. An adherent placenta is a very rare complication, and when it occurs, of course the uterus has to be emptied manually unless you happen to believe one recent writer who advises that the abdomen and the uterus be opened and the placenta taken out from above. Inspection of the placenta ought not to be merely perfunctory. A careful examination in all cases is needed, for by it you know whether you have left behind a major portion of the membranes or not, or whether a piece of placenta is retained. If the membranes are left behind, unless there is bleeding, I never attempt to go after them, as they will always come away in the lochia without damage, providing we have not infected the genital tract. But it is a different situation when placental tissue is left. That should be removed at once, for it is sure to cause more or less severe bleeding later. A succenturiate placenta is not very uncommon, as I have seen a half dozen within the year, two of which were in consultation where serious secondary post-partum bleeding took place. One of the patients nearly lost her life through a combination of hemorrhage and sepsis. In the other patient, the cause was recognized early and a curettage speedily cleared up the condition. Both patients, however, were subjected to an unnecessary risk because of failure to recognize this condition.

How so many physicians dare to leave their obstetric cases so soon after delivery, literally as quickly as they can pack up and get out, has been to me a great source of wonder. They cannot know that the uterus is well and firmly retracted; and until that fact is established, is it right to leave a patient?

In a publication of the Children's Bureau which came out this year on Maternal Mortality, the astounding facts were brought out that "in 1913 in the 'death registration area' of the United States, 10,010 deaths were reported as due to conditions caused by pregnancy and childbirth. Of these deaths 4542 were reported as caused by puerperal septicemia." Using these figures as a basis it was estimated that there were in the whole United States 15,376 deaths in 1913, due to childbirth, and 6977 of these were due to sepsis.

Such figures are staggering and almost unbelievable. But Dr. Meigs, the author of the pamphlet, says that the figures are probably a gross underestimate, and this conclusion is backed up by the quotation I read earlier in the paper about the falsification of death causes in Fall River. It is not to be supposed that conditions are any worse as regards honest death returns in Fall River than in other cities and towns.

We are not going to improve our mortality rate in obstetrics unless we first admit one exists. If we try to cover up the causes of deaths and try to blind ourselves to the real underlying cause, we shall never improve the condition. Physicians cover up deaths from sepsis because they fear they will be blamed—and is that fear groundless? They should be in by far the majority of cases of sepsis. Read Oliver Wendell Holmes's original communication on the havoc of puerperal fever, in the *New England Quarterly Journal of Medicine and Surgery* for April, 1843. Read Sinclair's book on Semmelweis, a pathetic life story. The deaths then were terrible, but those men showed the cause, and we now, knowing the cause, still lose thousands of women a year from what is surely almost entirely a preventable disease. Communities point to their low death rates from typhoid and other preventable diseases, but as yet there has been no sustained effort to lower the death rate from diseases of childbirth. The death rate has remained about stationary, with slight annual fluctuations but with no steady drop.

Dr. Meigs compares the death rates from fifteen foreign countries with that of the United States and shows that the United States stands fourteenth in the list, only two countries, Switzerland and Spain, showing a higher rate, while Sweden, Norway and Italy show the lowest rates.

Can we dispute these facts as published by the federal government, or must we accept them as the true state of affairs? I am afraid there is nothing for us to do but to accept them and go to work in every possible way to improve them. The State Department of Health, under the stimulus of the war, is already planning out a campaign to enlighten the women of the State what better obstetrics means, what child conservation means, and it will not be long before definite propositions to improve these bad conditions will be before us.

Now to be specific, how can we cut down the death rate from sepsis? In a word, we must develop the physician's conscience, his obstetric conscience, if you will. We all *know* obstetrics is surgery and an important branch of surgery, and no man will for an instant think he can do surgical work without being clean, surgically clean. The slovenly, dirty methods in obstetrics must be driven out. Much surgical work is done in community hospitals and if cases go wrong in them, there is a certain amount of publicity gained, which hurts. Most obstetric work is done in homes where the standard is what the physician elects it should be. When cases here go wrong they are more easily covered up than if they are within the hospital. That they are covered up, I think I have already sufficiently shown.

Careful ante-partum examinations will reduce the need of vaginal examinations in labor and therefore reduce the opportunity of carrying infection into the vagina. Shaving the patient, and careful scrubbing of the external genitals, combined with the use of rubber gloves, will still further minimize the danger from sepsis. Bungling operating without sufficient experience, without any standards of asepsis, is one of the chief causes of sepsis. The willingness of many physicians to do hard operative work in obstetrics when they hesitate to do minor surgical work is beyond my understanding.

It is no credit to a physician that he goes through years of practice without sepsis. It simply means that he is surgically clean; that he has an obstetric conscience. But on the other hand, a physician who has several cases of sepsis a year should be severely criticized and should be made to feel that he is a menace to the community wherein he practises, and until he improves his technic he should be barred from practice.

When sepsis appears, the first thing to do is to admit it, and then treat it. I am confident that much damage is done by the so-called radical treatment of this condition. The curette or the douche does more harm than good. They generally spread the infection and make a bad matter rapidly worse. Placing the patient in Fowler's position, an icebag to the fundus of the uterus, small doses of ergot, fresh air and plenty of good food, no matter whether the patient is running a temperature or not, is much better treatment than the curette or the douche.

Such then, in brief, is the outline of what better obstetrics means. The obstetric situation today is not a pleasant one, but the ray of light in it is the awakening of the public demand for improved obstetric hospitals and for a higher standard of obstetric work. It is a growing demand and one that we physicians must recognize,—be ahead of and not lag behind.

FOCAL INFECTION AND RHEUMATISM.*

BY WILLIAM E. PREBLE, M.D., BOSTON.

I. Scope of Paper.

THE object of this paper is to summarize briefly the more important points in our present knowledge of focal infections in their relation to chronic arthritis, and to give in some detail the main indications for treatment of the latter disease.

II. Historical.

The general theory of systemic disease arising from some local lesion is very old. S. Spooner, M. D.,[1] a dentist, in his "Guide to Sound Teeth," published in 1838, remarks:—"There can . . be no doubt but that diseases in the mouth often severely affect the constitution, and are conducive to several diseases of the general system." And again:—"I cannot help thinking that our success in the treatment of all chronic diseases would be very much promoted by directing our enquiries into the state of the teeth in sick people." E. G. Kelley, M.D.,[2] another dentist, in his book "Kelley on the Human Teeth," published in 1843, expresses similar views, and quotes Dr. Fitch's report of "two remarkable cases of rheumatism caused by the teeth," one of which was permanently relieved by extraction of the diseased teeth.

Note that these ideas were expressed several years before the birth of bacteriology—in 1850.

On October 20, 1875, Dr. John W. Riggs, a Hartford, Conn., dentist, read a paper before the American Academy of Dental Surgeons in New York, ascribing pyorrhoea as a cause of systemic disease. Two years later, in 1877, Dr. Alfred Mantle, of England, pointed out the relationship between the tonsil and rheumatic fever. In 1899, Adami[3] published his paper on "Latent Infection and Subinfection," and in 1914 he elaborated the ideas expressed in his early paper.

In 1900 Poynton and Paine,[4] of England, began their wonderful series of papers on rheumatic fever, proving that the disease is caused by the diplococcus rheumaticus, or streptococcus rheumaticus, and that the original focus of infection is usually in the tonsils.

In 1909, Billings[5] and Rosenow began to publish the results of their work at Rush Medical College on focal infections, and, by wonderful team work of clinicians, laboratory men and surgeons, put the whole subject on a scientific basis.

III. Focal Infection.

Billings defines a focus of infection as "a circumscribed area of tissue infected with pathogenic micro-organisms." The foci may be *primary,* usually located in tissues communicating with a mucous or cutaneous surface; or *secondary,* from extension of the infection through tissues, lymph channels, or blood stream. An example of the former would be an infected tonsil, the crypts of which allow easy access to bacteria from the mouth, and the interior of which is an almost ideal breeding-place for micro-organisms. The tissue is partially walled off from the general circulation, thus protecting the parasites from the bactericidal powers of the body, and favoring the development of symbiosis between host and parasite. Bacteria may escape through the capsule to the peritonsillar tissues, through the lymph channels to cervical glands and probably to pleura and lungs, or through the blood stream to joints and viscera. Secondary foci may be formed in any of these tissues, and may in turn furnish bacteria for further dissemination.

Common locations of foci are the tonsils, root canals of the teeth, accessory sinuses, adenoid tissue, gall-bladder, appendix, and the various organs of the male and female pelvis. Less common locations are furuncles and ulcers of the skin, the middle ear and mastoid, infections about finger and toe nails, and ulcers and infected thrombi of the rectum. From these foci of infection, there may emanate bacterial emboli or a bacteriemia.

The various strains of streptococci are the most common offenders. The bacteria or bacterial emboli enter the blood stream and lodge in the smaller or terminal blood-vessels in the various tissues and form new colonies, or release toxins when they die that poison the tissues. The various strains have a specific elective pathogenic affinity for the tissues in which they lodge. Cultures from a case of endocarditis, injected intravenously into rabbits, will give their chief lesions in the heart of the animal; cultures from the gall-bladder will produce cholecystitis, and from the appendix, appendicitis. The strain of streptococcus may change its affinity after a period in animal tissue, thus accounting for the lighting up of an appendix or a gastric ulcer in a person subject to, perhaps, recurrent attacks of acute arthritis.

The scientific demonstration of the truth of this conception of focal lesions as a cause of systemic disease has revolutionized our treatment of scores of diseases. Many of the diseases formerly supposed to owe their etiology to some "diathesis" or "dyscrasia" are now known to be of infectious origin. Rheumatism is an excellent example of the above statement, and the erroneous idea that "red meat" and acid fruits and vegetables cause rheumatism is still deeply embedded in the mind of the layman.

Nearly every one has at some time some local infection which *might* become a focus of systemic disease. The factors involved in the relative infrequency of systemic infection as compared to local infection concern both the host and the parasite. As regards the host, his general physical condition and his natural or acquired immunity are governing factors. The natural defenses of the body—the bactericidal powers of the tissues, blood plasma, and phagocytes—protect the large majority of people from systemic infection. Indeed, the local infection may itself act as a stimulant to the development of body defenses and the formation of protective antibodies.

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* Read before the Kennebec County Medical Association, Augusta, Me., Oct. 2, 1917.

Exposure to cold, malnutrition, exhaustion, alcoholic excesses, and the drug habit all tend to lower the resistance of the individual.

As regards the parasite, its virulence, the number present, and accessibility to avenues of exit from the primary focus are factors having to do with the development of systemic disease from the local infected area.

In order to realize the importance of the subject, we have only to consider the large number of diseases that have been proven to develop, or may develop, from focal infections. Of the common acute diseases, rheumatic fever with its sequelae such as endocarditis, myocarditis, pericarditis, and pleuritis; cholecystitis, acute appendicitis, acute nephritis, purpura, and erythema nodosum probably always arise from a focal infection.

Gastric and duodenal ulcer, iritis, chorea, pancreatitis, and spinal myelitis usually owe their existence to distant infected foci.

Chronic infectious nephritis, cholecystitis, endocarditis, neuritis, and arthritis deformans have been definitely proven to be in this category. Some cases of anaphylactic disease, such as bronchial asthma, urticaria, and hay fever, are caused by a focal infection.

IV. Rheumatism.

Rheumatism may be taken as an example with which to describe in some detail the development of systemic disease from a focal infection. The term "rheumatism" is a much-abused word. By many, it is applied, not only to the various types of arthritis, acute and chronic, but it is also used as a sort of blanket diagnosis covering all obscure aches and pains. Arthritis is a much better term to apply to the various diseases of the joints and surrounding tissues. Of the acute types it is necessary to distinguish between the ordinary rheumatic fever and acute gonorrhoeal arthritis. The former never causes suppuration in the joints, and usually subsides without causing permanent damage to the joint structures. It frequently follows acute tonsillitis, or other acute streptococcus infection.

The gonorrhoeal type always accompanies or follows an acute urethritis. Suppuration frequently occurs in the joints, which are often permanently damaged. The suppurating joints must be treated surgically.

The chronic arthritides are more complex, and less easily differentiated. Arthritis deformans, the ordinary kind of so-called chronic rheumatism, is a fairly distinct type. The chronic course, with exacerbations and remissions, enlarged, painful joints, contractures of muscles from myositis, deformities of joints. and a tendency to attack the larger joints, is a fairly distinct clinical picture. Chronic gout is a rare disease in this country. The exacerbations are more violent, the small joints are usually the ones attacked, and in a very large majority of the cases the joints of the great toe are at some time involved. Gouty tophi are usually present and the uric acid content of the blood is increased.[8]

Chronic gonorrhoeal arthritis is more apt to be monarticular, and the knee, ankle, wrist, shoulder, and spine are the joints most frequently involved, in the order named. Myositis practically never accompanies it. The gonorrhoeal focus can usually be found.[9] Tuberculous joints are usually single, often suppurate, and frequently follow trauma. Charcot joints, with the disorganization of joint structures, are always associated with tabes. Senile arthritis, a degenerative process, is recognized by the age of the patient, and the absence of chronic myositis. A sort of vascular arthritis occurs in cases with poor circulation.[10]

Arthritis deformans may be hypertrophic or atrophic; in fact, the atrophic is frequently the end stage of the hypertrophic. The spine is frequently involved. In every case a primary focus of infection may be assumed, from which bacteria, or bacterial emboli, are released and lodge in the smaller blood-vessels of the joint tissues. Endothelial proliferation of the lining of the blood-vessels occurs, with or without thrombosis. There results blocking of the blood-vessels with hemorrhage into the immediate tissues, and multiplication of leucocytes and plasma cells, or fibrino-plastic exudate with connective tissue overgrowth.[11] The circulation in and about the joint is seriously impaired. and the nutrition of the joint suffers. Adhesions form, and the tissues are matted together, interfering with the mobility of the joint. The neighboring muscles are usually infected, causing the troublesome contractures which are the chief cause of deformities. The metabolic changes in the joint tissues have been well described by Nichols and Richardson.[12]

V. Primary Focus.

The primary focus of infection may, theoretically, be located in any tissue in the body, and in some cases it is difficult to find. The most common locations are the tonsils, the peridental tissues, and the accessory sinuses. Tonsils may appear perfectly normal, and yet harbor the primary infection.

Abscesses may exist at the apices of teeth with absolutely no clinical symptoms. A very large percentage of devitalized teeth have abscesses at the roots, and the x-ray is the only sure way of discovering the abscess. Teeth with crowns or bridges are particularly apt to harbor infection about the roots. The accessory sinuses may harbor a local infection without giving clinical symptoms. Here again the x-ray is the deciding factor. The prostate gland, Fallopian tubes and pelvis of the kidney, gall-bladder, or appendix theoretically may harbor the primary infection. It is probable that some cases are the result of infection in the bowel, not from the absorption of the products of proteid putrefaction, or from the absorption of bacterial toxins, but from the passage of the bacteria themselves through the intestinal wall and into the blood or lymph stream.

As bacteria probably do not pass through the healthy intestinal mucosa, injury to the bowel by infection or as a result of stasis or chronic constipation must be assumed. Beveridge[13] called attention to the fact that many soldiers in the South African War suffered from arthritis following attacks of acute dysentery. Micrococci were isolated from the blood in cases with arthritis, but were not found in cases without arthritis. If a patient with arthritis has visceral ptosis and stasis, it should not be assumed that the stasis is the cause of the arthritis. The focus of infection is much more likely to be elsewhere.

The internist requires the co-operation of various specialists in handling these patients. It is frequently necessary to have examinations made by the nose and throat man, aurist, gynecologist, G.-U. specialist, roentgenologist and dentist. Valuable information may be obtained by examining the blood, stools, urine and joint exudates for bacteria. In some cases it may be advisable to excise lymph nodes proximal to the affected joints, and isolate the offending organism. The knowledge may prove valuable, for it does not necessarily follow that because a patient with arthritis has enlarged tonsils, the latter are the cause of the arthritis. The general condition of the patient must be carefully observed. Many of these patients are undernourished, and their metabolism impaired by the chronic toxemia resulting from the bacterial metabolism. Mental depression is a common symptom that requires attention.

A careful and complete history of the patient is always essential. Recurrent attacks of sore throat or tonsillitis would bring the tonsils under suspicion, however innocent they may appear. A constant or recurring unilateral nasal discharge would raise the question of a chronic infection in one or more of the sinuses. Any constant or recurring discharge from the ear would call attention to the middle ear as a possible focus of infection. The source of pus in the urine should always be ascertained, as infection in the kidney, bladder, prostate, seminal vesicles, uterus, or Fallopian tubes may be the source of systemic disease.

As syphilis may be the cause of a type of chronic arthritis, a Wassermann test is indicated in obscure cases.[14]

VI. *Treatment.*

The treatment of arthritis deformans and, in fact, of all of the diseases that may arise from a focal infection should begin with the birth of the child. Of first importance is the care of the mouth. St. Vincent's Orphanage in Boston, an institution caring for about 300 children between the ages of 4 and 14, prior to the year 1910 maintained no dental supervision of its inmates. The number of cases of infectious disease in the years 1908 and 1909 was 103 each year. In 1910 Dr. Frederick A. Keyes was appointed visiting dentist, and installed a system of prophylactic dentistry. The figures of incidence of infectious diseases for 1910. 1911, 1912, and 1913 are respectively 87, 52, 20, and 7. The seven cases in 1913 were due to an epidemic of measles, introduced by a new inmate.[15] These startling figures give a glimpse of what may be possible for a community in the way of prophylaxis. The so-called slight infections of childhood may be the cause of residual infectious foci that endanger the future health or even the life of the child. It is hardly necessary to observe that in all the so-called children's diseases, the advice of a competent physician should supersede that of "grandma."

The general care of the child as regards clothing, bathing, care of teeth and mouth, and intelligent regulation of the diet, influences the whole future life of the individual—physical, mental, and moral.

The treatment of arthritis deformans varies with the condition of the patient. The first step is to find and remove the primary and all possible secondary foci of infection, and usually the surgeon must be called in. It must be remembered that every colony of the causative microorganism is a focus that may continue to furnish bacteria to the blood stream after the primary focus is removed. The colonies in the joint tissues may themselves be sufficiently vigorous to keep alive the infection after the surgical removal of the original source of infection. This accounts for many failures in treatment.

After the local infection is removed, the task is but begun. Every possible means must be used to build up the resistance of the patient. Rest, fresh air and sunshine, tonics, baths, exercise, and diet must all be given careful attention.

Rest.—Rest in bed is advisable if there is much active inflammation, until the excessive tenderness of joint tissues abates.

Fresh Air.—Plenty of sunshine and fresh air have the same beneficial effect in these cases as in other chronic diseases.

Drugs.—As regards drugs, salicylates relieve the pain, and iron or arsenic may be indicated as general tonics. The bitter tonics or hydrochloric acid in essence of pepsin may be used to stimulate the appetite.

Baths.—The excretory functions of the skin should be stimulated by daily baths. Many of these patients are too debilitated to take cold baths, but tepid baths are just as beneficial.

Diet.—As regards the diet, it should be remembered that the old "red meat" theory was exploded in 1902, but the idea is not yet completely eradicated. It was formerly assumed that uric acid and rheumatism were in some way related, and that the so-called red meats—beef, mutton, venison, etc.—contained more uric acid than the lighter-colored meats. Both assumptions were wrong. Arthritis deformans is an infectious disease, and the only respect in which food influences its course is in the way of general nutrition. As regards the "red meats," it was definitely proven, over fifteen years ago, that beef, mutton, etc., contain less than one-third as much of the purin bases (from which uric acid is formed) as chicken, veal, and lamb.[16]

Proteid.—Patients with arthritis deformans need plenty of protein to help build up the wasted muscles and other tissues. Recent work by the biological chemists seems to show that all of the amino acids found in the various proteids are necessary constituents of the body, and it is probable that a considerable surplus of proteid, above the quantitative proteid requirement, is necessary in order to furnish a sufficient variety of amino acids to satisfy the wants of all the body tissues. Meat, fish, milk and eggs should be given freely, and the total proteid intake should approximate 100 grams daily.

The carbohydrate intake should be regulated according to the general state of nutrition of the patient. The obese patient should have small quantities of bread and sweets, with an abundance of green vegetables and fruit. The poorly nourished patient should have plenty of bread, with butter, milk, and cream added freely to the diet. All of these patients should have plenty of fruit and fruit juices, and fresh vegetables to supply the various salts necessary for the body chemistry.

It should be remembered that the old idea, that acid fruits and vegetables cause rheumatism or "make the blood acid," is erroneous. On the contrary, practically all of the organic acids in our common fruits and vegetables form alkaline carbonates when absorbed, and increase the alkali reserve of the blood. Prunes, plums, and cranberries are the exception.[17] Oranges, grapefruit, tomatoes, etc., with a sufficient quantity of the fodder vegetables to give the necessary bulk to the stools, are indicated.

The fats are used freely or sparingly according to the patient's store of body fat. Butter and cream are, as a rule, very easily handled by the digestive tract. It is never necessary to give olive oil or cod liver oil, as butter and cream are no more expensive, are just as nourishing and much more palatable.

Fluids.—The fluid intake is important. Sufficient water and other liquids, such as tea, coffee, and milk, should be given to enable the kidneys to excrete with the least possible irritation not only the normal waste products of metabolism, but also the toxins released from the dead bodies of the bacteria, or formed by the bacterial metabolism. A minimum of two quarts daily should be given to an adult. Intelligent supervision of the diet is the most important single factor in building up the health of these patients.

The local treatment of the joints in the severer cases is a problem for the orthopedic surgeon. Every possible means should be used to restore the circulation in the anemic and undernourished joint tissues. In the stage of active inflammation rest is essential, and bandages, splints, or plaster casts may be necessary. After the active inflammation has subsided, passive motion should be used, then active motion, and finally graduated exercise of the joint to break up adhesions and restore mobility. Massage is particularly beneficial. Alternating hot and cold shower baths improve the circulation, and electricity relieves the pain and may help the tissue metabolism. The Bier treatment may be used to induce a passive hyperemia of the joint. In some cases, surgery in indicated to reduce deformity caused by contractures and ankylosis.

Vaccines.—Vaccines may be indicated to assist in the formation of specific antibodies. The autogenous vaccine should always be used. The use of stock vaccines is unscientific, and is quite as likely to do harm as good.

Sera have been tried without any beneficial result, and in some cases distressing anaphylactic symptoms result.

Recently Miller and Lusk[18] have treated acute and chronic cases of arthritis with intravenous injections of foreign protein. Proteose, albumose, and typhoid vaccine were used with good immediate results. Thomas[19] has recently reported a series of 86 cases treated with typhoid vaccine. The end-results do not seem very promising, but more experimental work along these lines may demonstrate the value of this method of treatment.

VII. Conclusion.

There is still much to learn about infection and arthritis. Neither our knowledge of these subjects nor our methods of treatment have yet approximated perfection, but the progress in the past ten years gives hope for the future.

Our success in the treatment of these arthritics will be directly proportional to the amount of intelligent, painstaking work and attention to details. One hundred per cent. of cures is not expected.

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CAUSES AND TREATMENT OF CHRONIC HYPERACIDITY, HEARTBURN AND SOUR REGURGITATION.

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THERE are very few affections in the domain of internal medicine, the conception of which is so much influenced by the *à priori* view of the physician, as are some of the affections of the gastro-intestinal tract. One needs only to mention the significance and importance attached by some physicians to ptosis of the abdominal organs, the views as to the importance of constipation as a cause of local and general disorders, and the vague conception of biliousness, nervous dyspepsia, intestinal indigestion, and auto-intoxication. It is much the same as regards hyperacidity, although this is one of the most familiar gastric disorders, and one that the physician is daily called upon to treat. Only a few years ago, gastralgia played a prominent rôle in painful gastric affections; it was assumed to be due to some form of gastric spasm induced by hyperacidity. Recently, however, a tendency has developed, especially among surgeons, to go to the other extreme, and deny the existence of hyperacidity as an independent functional disorder, and to regard it merely as a symptom of some lesion within the gastro-intestinal tract. And even among those who consider chronic hyperacidity as a clinical entity, we find a great deal of vagueness as to its etiology, symptomatology, pathogenesis, and treatment.

Many physicians class any functional gastric disorder as hyperacidity when it gives rise to heartburn and sour regurgitations. And even such authors as Luthje and Albu consider the condition hyperacidity in the presence of these symptoms, though the gastric acidity may be only normal, or even subnormal. In the latter case, however, they use the term "latent hyperacidity."

Now these views, which associate heartburn with hyperacidity, are, to my mind, erroneous and at variance with clinical facts. Comparing the findings in the gastric contents with the subjective symptoms of the patient, it is found that sour regurgitations and heartburn are very rarely symptoms of hyperacidity. Sour regurgitation occurs only when there is an associated hypersecretion, while heartburn is found in connection with normal, sub- and even anacidity, and is, therefore, when continuous and persistent, a separate gastric disorder differing from hyperacidity in its etiology, symptomatology and treatment.

Chronic hyperacidity as a functional disorder and independent of any organic affection is, according to my observation, found only in the psychoneurotics, in whom it constitutes a fairly common affection. It occurs more often in young adults and in the middle-aged than in the elderly, and is more common in women than in men. The symptoms of hyperacidity appear from half an hour to two hours after meals, and vary greatly in different patients, and frequently even in the same patient at different times. In the majority of cases there is a sense of uneasiness, fullness or distress in the gastric or in the umbilical region, belching of gas, dryness of the tongue, and a disagreeable taste in the mouth. Some patients complain of pain in the region of the stomach or across the abdomen, of a sense of weight underneath the sternum, as if some foreign body had lodged in the esophagus, and a disagreeable pressure in the back, between the shoulder-blades. In some instances the pain and the distress are in the lower part of the abdomen, which is greatly distended, with tenderness over both iliac fossae, belching of gas and passing of flatus,—a condition which is quite often diagnosed as intestinal indigestion, and, by some of the older physicians, as flatulent dyspepsia. Constipation is usually present, but in some cases there are normal daily evacuations, and in others even diarrhea. The appetite varies, sometimes greatly impaired, at other times very good, depending more upon the general than upon the local condition of the stomach. The same is true of the weight and the general health, although losses of fifteen to twenty pounds in weight are by no means rare.

Pains are not frequent, and are rather dull in character when present, but in some cases they are quite severe, shooting from the gastric region through the back, and are relieved by food, as in gastric ulcer. In a case of hyperacidity in a psychoneurotic woman, about 55 years of age, the pains were on a few occasions so severe as to originate the suspicion of either ulcer or gallstones; but she has since then developed diabetes, and the pains, as well as the other gastric symptoms, have disappeared, not having returned in about seven years.

There is in addition a train of nervous symptoms, such as headache, backache, dizziness, pressure on the back of the head, disturbed sleep, and in women, an "all-gone feeling," palpitation of the heart, and various paresthesias. These nervous symptoms are in some patients quite prominent, while in others they are masked by the local symptoms, and elicited only by close questioning.

Sour Regurgitation or Acid Eructation. This occurs only when there is an associated hypersecretion, which, contrary to the general opinion, is found quite often in normal and subacidities. This, however, refers only to the so-called digestive hypersecretion, as my experience in gastrosuccorrhea continua is limited; but in one case of the latter affection that came under my observation a hypoacidity was found in the gastric contents after a breakfast test.

Heartburn. This is, when continuous and persistent, a distinct separate gastric neurosis, as it is rarely found in hyperacidity, and is, on the other hand, quite common in some forms of dyspepsia with normal, sub- and even anacidity. In the case of a psychasthenic woman, in whom heartburn was the dominant symptom, the examination of the stomach contents showed an absence of free hydrochloric acid and only a low total acidity. As an experiment, she was given 15 drops of acid mur. dil. after meals, with the result that her heartburn became much worse. This case incidentally illustrates the futility of sending the stomach contents to a laboratory for examination, and basing the treatment upon the findings.

Heartburn is due, not to the acid contents of the gastric juice, but to a hyperesthesia of the gastric mucous membrane, which perhaps accounts for its frequent occurrence in the early stages of some cases of gastric carcinoma, where there is yet some free hydrochloric acid and good motility, and none of the organic acids to which it is usually ascribed. Here, as there, the heartburn, in my opinion, is due to a hyperesthesia of the gastric mucous membrane; but in cancer the hyperesthesia is organic, the result of an accompanying irritation, and in some cases inflammation, of the gastric mucous membrane.

Heartburn differs from hyperacidity in being at times psychogenetic, while the latter is always neurogenetic. The difference between the terms "psychogenetic" and "neurogenetic," while it may be merely metaphysical in theory, is quite concrete and useful in practice. Extrasystoles, discovered in a patient who has no heart symptoms, are certainly neurogenetic; but dyspnea, occurring in a woman patient as soon as she learned that she had a murmur (which turned out to be only functional), is certainly psychogenetic. Pyloric stricture in an infant, if due to nervous influences, **is** undoubtedly neuro- and not psychogenetic, while the constant and noisy belching of gas which occurs in some cases of heartburn where there is no sign of either gastric or abdominal distention, is probably psychogenetic. Another difference between hyperacidity and heartburn is that the former yields readily to treatment by diet and alkalies, while these measures have but little influence over the latter, which is, indeed, frequently made worse by alkalies.*

Diagnosis. The diagnosis of hyperacidity cannot be made without the use of the stomach tube, as the same symptoms may occur in chronic gastritis and in cases of anacidity in which heartburn is no feature, and which require different treatment.

Hyperacidity, as here referred to, is assumed when the free hydrochloric acid is above 35 and the total acidity above 55. The gastric contents are extracted 50 minutes after a Boas-Ewald breakfast test, and examined, unfiltered, amidoazo-benzol being used for the qualitative and the quantitative determination of the free hydrochloric acid, and the titration with the decinormal sodium hydrate solution is continued until the pink color has almost entirely disappeared. And when, upon the introduction of the stomach tube, there is a sudden gush of a large quantity of a somewhat pale, clear liquid, with but little sediment, the existence of a digestive hypersecretion is assumed.

Hyperacidity is to be differentiated from gastric ulcer and from various other affections in which, according to many authors, it occurs symptomatically, as in gallstones, acid gastritis, chronic appendicitis, nephrolithiasis, chlorosis, chronic constipation, and eye strain. The differentiation from ulcer is easily made by testing the stools for occult blood, which is absent in hyperacidity, and, according to my experience, invariably present in ulcer. From the other affections it is distinguished by the subjective symptoms and objective findings peculiar to these affections. On the other hand, it is somewhat questionable whether the digestive disorders in the above affections, with the exception of gastric ulcer, are actually accompanied by hyperacidity. The observations concerning the nature of these disorders have been only occasional and of isolated cases, and, so far as I know, no systematic examination has ever been made actually to determine this point. This is particularly true of constipation, which, under the name of colonic stasis, has been made responsible, not only for hyperacidity, but also for a variety of other affections. Typical cases of psychoneurosis have been cited by some authors as examples of auto-intoxication due to intestinal stasis, and Penzold even asserts that the bad behavior and ill manners of many children, upon whom punishment has no effect, can be entirely removed by a colonic irrigation. And he even goes so far as to say that adults committing impulsive criminal acts should have their punishment mitigated if they are found to be sufferers from constipation.

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* Boas, to my knowledge, is the only author who regards heartburn as a separate gastric neurosis; but he does not differentiate it entirely from hyperacidity.

There can be no doubt, however, that the importance of constipation as a cause of disease is here ridiculously exaggerated; and its baneful effects, as described by Penzold and others, are, to my mind, due to metaphysical speculations and not to an accurate observation and logical interpretation of clinical facts. Constipation, according to my observation, is either a secondary or a coördinate symptom of a general or local disorder, and not the cause. In numerous cases of the psychoneuroses, the bowel action is suspended with an aggravation, and resumed with an improvement, of the general condition; in others the constipation disappears while the general condition remains the same. One neurotic young woman, whose symptoms were attributed to colonic stasis, took in one day eight alophen pills, four tablespoonfuls of castor oil, and three enemas, all without any result. But measures directed toward the improvement of her general condition, with oil injections into the rectum, restored the bowel function, without, however, improving the general symptoms. The exaggerated idea among the laity of the importance of open bowels will at times bring about a train of nervous symptoms in patients suffering from habitual constipation, but the symptoms, I am convinced, are not due to constipation as such; they are merely psychogenetic, and can be induced by various other auto-suggestions.

It does not follow, however, that constipation need not be combated, or that it is not likely to aggravate any acute or chronic pathologic condition; exception is merely taken to its being considered a cause of disease.

Etiology and Pathogenesis. Hyperacidity and heartburn are practically forms of nervous dyspepsia, and their causes are the same. Nervous dyspepsia is not a local gastric neurosis, in the original sense of von Leube, but a general neurosis with dyspeptic symptoms, the latter being either a symptom or part and parcel of the general nervous disorder. Dreyfus, whose description and classification of nervous dyspepsias has brought order into chaos, divides them into the following two groups, and cites cases to illustrate the different types:—

Group 1. Degenerative psychopathologic conditions with dyspeptic symptoms:

(*a*) Psychopathy (psychasthenia, constitutional neurasthenia) with psychopathic reactions as a cause of dyspepsia;

(*b*) Psychogenetic dyspepsia;

(*c*) Hysteria as a cause of dyspepsia;

(*d*) Cyclothymia as a cause of dyspepsia.

Group 2. Acquired neurasthenia with dyspeptic symptoms.

If we accept this classification, it follows that nervous dyspepsia is not a clinical entity, but that it varies according to its etiology, and that it should, therefore, for practical purposes, be spoken of according to its dominant symptoms, as hyperacidity, heartburn, nervous vomiting, nervous anorexia, etc. Besides, the types as described by Dreyfus, while they clear and define our conception of nervous dyspepsia, are not so easily differentiated in practice, and do not offer any special indication for treatment, which must be symptomatic as well as general.

The conception of nervous dyspepsia as a part of a general neurosis answers the question as to why hyperacidity is occasionally found to exist without causing any symptoms. The explanation, according to my mind, is as follows:—

With a normal nervous system (the term "normal" being relative only) there is also a normal sensibility of the gastric mucous membrane, which is not affected by a little more acid in the gastric juice. With a disordered nervous system, and therefore with a hyperesthetic mucous membrane, an increased acidity will cause an abnormal local reaction. In the severer forms of the neuroses the hyperesthesia of the mucous membrane is increased to such an extent that the mere chyme, with little or no free hydrochloric acid, is sufficient to cause severe gastric symptoms. This view is also in accord with clinical observations, as hyperacidity is usually found in the milder forms, while heartburn, with normal or subacidity, is encountered in the severer forms of the neuroses. This rule, however, has only general and not universal validity, as heartburn may at times be associated with hyperacidity and be present in the severe forms, while normal or subacidity, without heartburn, may be found in the milder forms of the neuroses. But these deviations from the general rule are due, to my mind, to the fact that the neuroses, as found in practice, are not always well circumscribed, but that there is an overlapping in a great many cases.

It may be asked whether a chronic functional disorder of the stomach may not exist independent of a general neurosis, and be due entirely to local causes, such as highly-spiced or over-rich food, or the abuse of tobacco, etc. This question, I believe, must be answered in the negative, unless one agrees with Albu that there is a form of hyperacidity which is a forerunner of gastric ulcer. But this pre-ulcer stage of Albu can no more be substantiated clinically than can the pre-cancer stage of tumors, which is assumed by some authors.

As to the nature of hyperacidity, nothing definite is known. We know from the researches of Pawlow that there is an intimate relation between gastric functions and certain mental and emotional states. But why such states should in some cases give rise to a hyper- and in others to a hypo- or an anacidity, is no more known than why such states, which, in the majority of cases, give rise to an acceleration of the pulse, should, in some instances, cause a retardation of the same. The suggestion of Bickel and Rubow that hyperacidity is due, not to an increased acid secretion, but to either a hypermotility or a hypersecretion, is invalidated by the fact that a hypoacidity is found at times in spite of hypersecretion and normal motility.

The *treatment* of *hyperacidity* is, aside from measures directed towards the underlying neurosis, mainly dietetic. All sorts and varieties of diets have been recommended; thus Riegel advocated a pure proteid diet, because the proteids, combining with the free hydrochloric acid, diminish the gastric acidity. Albu advocates a lacto-vegetable diet and Juergenson a carbohydrate diet, based upon the experiments of Pawlow, which show that the gastric secretion is less stimulated by these substances than by the proteids. Von Leyden and Klemperer have suggested a diet of stale white bread, which, according to them, absorbs the free hydrochloric acid, but which will hardly satisfy American patients; while von Noorden and Zweig are in favor of a mixed diet, as the latter claims that neither the proteids nor the carbohydrates have any appreciable effect upon the gastric acidity. The same diversity of opinion exists among American authors. After trying several of these diets with more or less success, I have finally adopted a kind of mixed diet, but without meat, as the latter, at the beginning, disagrees with most patients, the proteids being supplied in the form of eggs, cheese, peas, and string beans. It is practically a modified ulcer diet, and is somewhat as follows: The first week, the patient is allowed only stale white bread, butter, eggs, milk, cream, buttermilk, cream cheese, and gelatine. The second week are added breakfast foods and cereals, thoroughly cooked, mashed potatoes, and oysters. The third week, vegetables in purée form, such as string beans, green peas, cooked celery, spinach, asparagus tips, carrots and turnips; lean fish, such as haddock, perch, flounder, pike, pickerel, all boiled or broiled, and cooked fruits. Lean boiled or broiled meats, as chicken, lamb chops, and roast lamb, are not given until the end of the fourth week in the milder cases, and in the severe cases not until the end of the sixth or seventh week. In the milder cases cereals and light vegetables can be allowed from the start. All smoked and salted meats and fish, spices, raw fruit, raw vegetables, salads, pastry, as well as macaroni and spaghetti, are excluded. It is, however, useless to emphasize the negative side of the diet, *i.e.*, telling the patient what not to eat; it is better and simpler to give him a diet list with instructions to eat nothing but what is on the list.

The diet, as here outlined, has been successful in all cases of pure hyperacidity. Whether it has actually reduced the hyperacidity I am unable to tell, as my patients refused a second examination with the stomach tube; but the dyspeptic symptoms have disappeared or have been greatly improved in all cases, even when the general nervous symptoms remained the same. Most patients also gained in weight, as the diet, even in the first week, can easily be so arranged as to contain about 4500 calories, which is practically an overfeeding in many cases. These dietetic measures are aided by medicinal treatment in the form of alkalies, which are useful in all cases, and indispensable in the case of those patients who have neither the leisure nor the facilities to carry out the prescribed dietetic treatment, and who must have, from the start, a diet which, under other circumstances, is not allowed until the third week. The light magnesia and sodium citrate are preferable to sodium bicarbonate, which causes distention by the carbonic acid it generates; and the effects of the alkalies are enhanced by the addition of bismuth and a small quantity of menthol in the following proportions:

Menthol	1. O
Magnesii ustae, Sodii citrici	āā 35. O
Bismuth subcarb.	20. O

Sig: One half teaspoonful in a little water half an hour to one hour after meals.

No laxatives are used, as the medicinal and dietetic measures mentioned are sufficient to maintain bowel action, and it is only in exceptional cases that pulv. rad. rhei. 15. o is added to the above mixture. Frequent meals, in order to absorb the free hydrochloric acid, as recommended by many authors, have not been found necessary, especially not after the first week, and the appetite improves in most patients when the meals are restricted to three a day.

The *treatment* of *heartburn* is very unsatisfactory, as it is difficult to arrange a diet which will be suitable to all cases. One woman patient with heartburn, who consulted numerous physicians without obtaining any relief, claimed to have no symptoms on a diet of bread and raw vegetables (radishes, tomatoes, lettuce, onions, etc.) recommended to her by an old Italian woman! When the acidity is normal or slightly subnormal, the dietetic treatment is that of hyperacidity in the third week, although the results are far less satisfactory; but when it is associated with a marked subacidity, the diet is purely empirical. Milk and cream are not well borne by most patients. Some do moderately well on carefully prepared cereals and vegetable purées; others thrive better on boiled or broiled lean meats and fish. The difficulty of the dietetic treatment of heartburn is undoubtedly the reason for the variety of diets recommended for hyperacidity, which most authors confuse with heartburn. As to the medicinal treatment, the alkalies are not only useless, but they even increase the heartburn, and they are regurgitated sour when there is an associated hypersecretion. The bromides, combined with small doses of chloral, act well in a number of cases, but they cannot be continued for any length of time, on account of the disfiguring acne which they produce in these patients after a few days' use, and the chloral alone does not act so well. In a few cases I have used small doses of opium combined with the tincture of cannabis indica and belladonna, with seemingly satisfactory results.

Hypersecretion occurs either with hyperacidity or with heartburn, and its treatment is that of the condition with which it is associated. Atropine has been highly recommended by Riegel, but it does not seem to have any effect upon the hypersecretion.

No reference has been made to the anomalies of motility, because they do not, according to my observation, dominate the clinical picture, nor do they offer any special indications for treatment. Impaired gastric motility, or motor insufficiency, unless due to stricture of the pylorus, or to some other organic affection (or perhaps to Stiller's disease) is, to my mind, of little moment, and its treatment is completely covered by the treatment of the affection with which it is associated.

SUMMARY.

Hyperacidity and heartburn are separate gastric disorders, and both are forms of nervous dyspepsia.

Nervous dyspepsia is either a symptom or part and parcel of a general neurosis.

Hypersecretion is not invariably associated with hyperacidity, as it occurs at times in hypoacidity.

Constipation is either a secondary or a coordinate symptom of a general or local disorder, and not its cause.

The nervous symptoms in habitual constipation are psychogenetic, and not the result of an auto-intoxication.

No chronic functional disorder of the stomach exists independently. Any such disorder, when not a part of a general neurosis, is due to some organic affection anywhere within the body.

The anomalies of motility, when functional, are clinically of little importance, and do not require any treatment apart from the treatment of the condition with which they are associated.

Hyperacidity is treated by a carefully selected mixed diet (with the exclusion of meat) and by alkalies.

The treatment of heartburn is empirical.

ARTIFICIAL PNEUMOTHORAX.

By Herbert F. Gammons, M.D., Carlsbad, Texas.

The use of artificial pneumothorax in the treatment of pulmonary tuberculosis has passed the experimental stage. While there is no question but that many patients have been injured by the injudicious use of this remedy, and while undoubtedly many of the published statistics in regard to this subject are so vague and uncertain as to be useless as a guide for future operations, there is no doubt but that the procedure of artificial pneumothorax, properly carried out, with patients under close supervision, is capable of doing much good. There has been a somewhat too prevalent idea that the absolute rest of the lung caused by the pneumothorax necessarily brought about a cessation of the disease and that no new tubercles developed in the compressed lung. That this is not necessarily the case has been shown by Dr. Allen Krause of Saranac Lake, who has clearly demonstrated that fresh tubercles may develop in collapsed lungs.

The results here presented were obtained at the Texas State Tuberculosis Sanatorium. I am indebted to Dr. J. B. McKnight, the superintendent, and to Dr. J. V. Wright for advice, coöperation and assistance.

By means of the stethoscope and percussion, the best field for operating was selected. The customary apparatus was used, including the "refill needle," as devised by Dr. Shortle. Subcutaneous emphysema was rare, except with the initial puncture. Atmospheric air instead of nitrogen gas was used, Dr. Gerald Webb having shown that nitrogen gas soon became changed into atmospheric air after remaining in the pleural cavity a short while. Except in hemorrhage cases, inflations were given every week. In hemorrhage cases, they were given as indicated. In every instance I endeavored to produce a neutral pressure, except in hemorrhage cases, where the pressure was continued until the bleeding stopped. Patients with an ulcerated process in the lung showed the most improvement in the way of decrease in cough, lessened expectoration and fall in temperature; inflammatory cases showed a decrease in physical signs, but practically no decrease in temperature. All, except two, patients showed an improvement in color. In two instances a collapse could not be produced on account of adhesions; two patients died following treatment, one as a result of miliary tuberculosis, and one following an intravenous infusion.

The following is a brief summary of the cases under treatment:

Artificial pneumothorax was attempted in 53 of these cases—26 were advanced, 14 moderately advanced, and 13 were hemorrhage cases. In two patients, both advanced cases, the process was apparently arrested, while in four moderately advanced cases the disease became quiescent. Ten were improved and are still under treatment, and in seven hemorrhage cases the injections were stopped because the hemorrhage ceased. Four patients left the institution improved, to continue treatment elsewhere. Five left unimproved. In four cases the use of artificial pneumothorax was stopped because of active trouble developing in the opposite lung, or for other reasons.

CONCLUSIONS.

1. Hemorrhage can be treated by lung compression with best results if not continued after bleeding is controlled, in bilateral cases.
2. The opposite lung must be carefully watched, while in addition, as stated by Hawes of Boston, the patient should be under the closest supervision, preferably in a sanatorium.
3. Ulcerative cases promise the best results, and if a patient is doing well, inflation should not be undertaken.
4. The best results follow the frequent inflations with small amounts of air in cases where the opposite lung is well or has an apparently healed lesion.

* * *

LIPOIDS IN 131 DIABETIC BLOODS.

By Horace Gray, Boston.

[From the Department of Biological Chemistry, Harvard Medical School.]

(*Continued from page 55.*)

AVERAGE AND MAXIMUM OF THE VARIOUS LIPOIDS IN DIABETES.

Total-fat *averages* twice normal, and *may* rise to about 20 times normal. Still greater rises are in the literature.

Total-fatty-acid averages to increase by 140% in the plasma, half as much as in the corpuscles, and may rise to about 34 times normal in plasma.

Averages for lecithin increase less in diabetes than those for any other lipoid, the level in the plasma being only 50% above normal, and in corpuscles actually a trifle *below* normal. The greatest rise in lecithin is to only 5 times normal, in plasma.

Cholesterol averages show a greater augmentation above normal than lecithin, but still much less than total-fat and total-fatty-acid. The maximum was less than 10 times normal. This rise in cholesterol, however, seems to be pathognomonic of chronic hyperlipemia, *e.g.*, diabetes *vs.* a rise in T.F.A. alone, as occurs in acute hyperlipemia, *e.g.*, overfeeding.

Glyceride averages increase in diabetes far more than those for any other lipoid, not only in the plasma, but especially in the corpuscles, by 460%. The maximal values were colossal, that for plasma reaching 94 times the average value in normal people. The increase in the corpuscles is untrustworthy, partly because of its extent relatively, partly because of its extent absolutely; the figures vary from minimal amounts around 1/20 of 1%, up to 3% in severe cases, when the glycerides in the corpuscles are higher alone than the total lipoids probably ever reach in alimentary lipemia of normal people.

Ratio $\frac{\text{T.F.A.}}{\text{L.}}$ shows again the familiar fact that in diabetes, whether we consider the average or the extreme case, the T. F. A. increases faster than the L. Considering the averages, the diabetic ratio is 55-73% higher than normal; while the extreme diabetic ratio may be 13 times normal. In other words, such a patient has 24 times as much T.F.A. as L.; instead of having about twice as much, as would be the case with a normal person.

Ratio $\frac{\text{L.}}{\text{C.}}$ by its decrease in diabetes shows again that as those two cytolipoids increase the L. lags behind the cholesterol, in the average diabetic, especially in the corpuscles, while in the extreme case more markedly in the plasma.

The total-lipoids' average increase was 115% in excess of normal, while in the severest hyperlipemia the figure reached 24 times the normal average. This 16.34%, the maximal value of my series, is still below 19.7%, the highest "fully-accepted" in the land of its production, according to Allen, and still more below the figure of 27%* accepted by Magnus-Levy.

Neisser, E., and Derlin, L.: Ueber Lipämie, Zts. f. klin. Med., 1904, li, 428-438.

Allen, F. M.: *l. c.*, p. 313.

* Frugoni, C., and Marchetti, G.: Beitrag zum Studium der diabetischen Lipoidämie, Berl. klin. Wch., 1908, xlv, 1844-1846.

Magnus-Levy, A., and Meyer, L. F.: Die Fette im Stoffwechsel, in Oppenheimer, C., Handbuch der Biochemie iv, 1, Jena, 1911, p. 464.

Comparison of the highest diabetic value in each column with the average normal is shown in Table XIII. In calculating the per cent. above normal, the normal has first been subtracted from the diabetic, then the difference divided by the normal. That is, if a diabetic value happened to be 0.40 compared with a normal of 0.20, it would be expressed here as "100% *above* normal," not as "200% of normal," an idea which would here be expressed as "twice normal." For the average normal I have added together all Bloor's figures from the 12-14 men (some of the determinations were not done on two of these) and the first 7 women, and divided through by 19, 20 or 21 in the proper places. In the table, for convenience' sake, I have, however, regularly used the number 21. This series, though small, is as yet the only standard available for the values as a whole; though for some of them, notably cholesterol, normals by other observers might be cited. Denis gives normal cholesterol figures for the whole blood from 6 women and 14 men, which when averaged together are found to equal 0.22%, still the same as Bloor's.

Denis, W.: Cholesterol in Human Blood, Jour. Biol. Chem., February, 1917, xxix, 93-110.

The greatest value *absolutely* is (of course) total-lipoids 16.34 g. per 100 cc., while the greatest *increase* (above the average normal person's level) is in a different column: Glycerides in whole blood, 9292% excess, *i.e.*, 94 times the normal.

TABLE XIII.

MAXIMAL DIABETIC VALUES *vs.* AVERAGE NORMAL.

BLOOD LIPOIDS IN PER CENT.

	TOTAL-FAT		TOTAL FATTY ACIDS			LECITHIN			CHOLESTEROL			GLYCERIDES		$\frac{\text{T F A}}{\text{L}}$			$\frac{\text{L}}{\text{C}}$			TOTAL LIPOIDS
	W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
Highest values among 131 diabetic bloods..	9.55	15.45	8.05	13.25	3.10	0.79	1.04	1.25	1.50	2.20	0.67	12.22	3.02	10.30	24.21	9.68	0.53	0.47	1.87	16.34
Average of values among 20 normal bloods	0.59	0.62	0.37	0.39	0.34	0.30	0.21	0.42	0.22	0.23	0.20	0.13	0.05	1.24	1.84	0.81	1.40	0.95	2.12	0.68
Per cent. above ave. normal shown by highest diabetic ..	1518	2392	2070	3300	810	163	394	197	582	856	235	9292	5940	726	1216	1095	...	...	...	2303
Per cent. below ave. normal shown by highest diabetic ..	....	....	....	....	...	...	...	...	...	...	...	....	....	...	....	....	62	51	12	....

Comparisons of the average diabetic values with the average normal are shown in Table XIV. The former have been computed both for the series as a whole, and also after exclusion of the specimens which have been peculiar from a laboratory viewpoint.

TABLE XIV.

AVERAGE DIABETIC *vs.* AVERAGE NORMAL.

BLOOD LIPOIDS IN PER CENT.

	TOTAL-FAT		TOTAL FATTY ACIDS			LECITHIN			CHOLESTEROL			GLYCERIDES		$\frac{\text{T F A}}{\text{L}}$			$\frac{\text{L}}{\text{C}}$			TOTAL LIPOIDS
	W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
Ave. of values among 131 diabetic bloods ..	1.24	1.56	0.89	1.14	0.53	0.36	0.33	0.42	0.34	0.41	0.22	0.79	0.29	2.24	3.14	1.34	1.18	0.89	2.02	1.71
Ave. of values among 105 diabetic bloods ..	1.12	1.34	0.80	0.95	0.55	0.36	0.32	0.41	0.32	0.38	0.22	0.60	0.28	2.14	2.85	1.40	1.22	0.91	1.95	1.46
Ave. of values among 20 normal bloods ..	0.59	0.62	0.37	0.39	0.34	0.30	0.21	0.42	0.22	0.23	0.20	0.13	0.05	1.24	1.84	0.81	1.40	0.95	2.12	0.68
Per cent. above normal shown by ave. values among 105 diabetic bloods ..	90	116	116	143	62	20	52	...	45	65	10	360	460	73	55	73	...	...	...	115
Per cent. below normal shown by ave. values among 105 diabetic bloods ..	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	13	4	8	...

The first diabetic average of all the 131 bloods analyzed is not considered so fair as the second based on 105, which will, therefore, be the one referred to.

VARYING BEHAVIOR OF LIPOIDS IN PLASMA AND CORPUSCLES.

Total-fatty-acid. The average in plasma is twice as far above normal as in corpuscles, while the extreme is four times as far in excess.

Lecithin. The average in plasma is here hardly comparable with that in corpuscles, one being 50% above normal and the other practically normal. The maximal increase is twice as great in plasma as in corpuscles.

Cholesterol. The average in plasma is six times as far above normal as in corpuscles, while the extreme is something under four times as far above.

Glycerides. The averages in plasma and corpuscles show about the same increase, while the extreme rises somewhat more in the plasma than in the corpuscles.

On the whole, the *corpuscles* show increased values, which, while distinctly less than plasma increases, still seem more marked than the present literature suggests. That the greater lipoid rise should occur in the plasma is to be expected from extant analyses for other substances in plasma and corpuscles.

INFLUENCE OF ANESTHESIA.

Four bloods were analyzed from patient 1228. Total-fat and total-fatty-acid were increased immediately after ether, with subsequent fall to subnormal. Lecithin and cholesterol were unaffected.

The specimens will now be taken up in relation to various headings. Each heading in turn will be subdivided into groups, which are necessarily arbitrary. Opposite each group-title will be given the lipoid averages of all blood specimens which have fallen in that group.

SEX.

In diabetic men and women there is no significant difference of lipoid level as is shown in Table XV. My averages were made after exclusion of the 17 male and 5 female specimens which had been marked 1-8 because of some peculiarity, as detailed elsewhere.

Table XV.

Sex.

	Corps. %	T.-F. in W. B.	L. in W. B.	C. in W. B.
Av. of values among 50 female diabetics	39	1.11	0.36	0.32
Av. of values among 57 diabetic males..	40	1.12	0.35	0.31

On examining the results reported by other observers who have used the same method, one finds there also no marked difference between the sexes. One finds incidentally somewhat lower values for cholesterol and much lower values for fat by Bloor's method; apparently Bloor's and Denis' cases were milder than mine. The number of specimens to each average are included in brackets.

Table XVI.

Sex.

	Bloor	Denis	Gray
Bloor's Fat-Method			
Women ...	0.78 (15)		1.11 (50)
Men	0.83 (19)		1.12 (57)
Lecithin			
Women ...	0.37 (15)		0.36 (50)
Men	0.36 (19)		0.35 (57)
Cholesterol			
Women ...	0.28 (15)	0.23 (13)	0.32 (50)
Men	0.29 (19)	0.25 (12)	0.31 (57)

It is interesting to consider the normal, which has been found higher in women than in men. Bloor found this true for T.F.A. in plasma, for L. in corpuscles, for C. both in plasma and corpuscles (or whole blood), for glycerides in plasma. In Gettler and Baker's normals, also, Lawrence and Riddle call attention to the much higher female average for total-ether-soluble ("fat" + cholesterol).

Lawrence, J. V., and Riddle, O.: Sexual Differences in the Fat and Phosphorus Content of the Blood of Fowls, Am. Journ. Physiol., 1916, xli, 430-437.

These authors also give evidence that female (fowl) plasma is richer in "alcohol-soluble" fat and phosphorus than the male.

It is still richer in the hens when laying, and here again they point out the similarity to Gettler and Baker's figures, showing a far higher fat average for two women of 30-35 years *vs.* three women of 48-59, *i.e.*, presumably past their ovarian activity. The latter point may be supported also by an *average* 0.23 which I have struck from the figures given by Denis for whole blood cholesterol in 12 pregnant women, although she seems unwilling to consider her *individual* figures significant. "No increase was noted." The average for her six non-pregnant women would be lower, however—0.19%.

Ecalle found that cholesterol gradually increased as pregnancy advanced.

Ecalle, G.: Fat and Lipoid Content of the Serum of Pregnant Women, Archives mensuelles d'obstetrique et de gynécologie, July 15, 1917, vi, 128.

On the other hand, *lower* female cholesterol values as against male have been pointed out by Lawrence and Riddle in Gettler-Baker's figures; these, however, seem much too low to be considered except possibly in a relative way.

DURATION.

The longer the duration of the disease, the *lower* the lipoids, as seen in Table XVII. This may be explained in at least two ways: long-standing cases are too emaciated to pile up excess fat in the blood, or cases that do pile up high lipoids are too severe to live long.

PROGNOSIS.

Do the lipoids help to foretell how long the patient will live? To determine this, the bloods of the fatal cases and the living cases have been grouped separately; the former happened to fall

TABLE XVII.

INFLUENCE OF DURATION.

		BLOOD LIPOIDS IN PER CENT.																		
		TOTAL-FAT		TOTAL FATTY ACIDS			LECITHIN			CHOLESTEROL			GLYCERIDES		T. F. A./L.			L./C.		TOTAL LIPOIDS
DURATION	NO. OF BLOODS	W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
Under 1 yr.	26	1.04	1.28	0.77	0.90	0.53	0.33	0.29	0.41	0.28	0.33	0.20	0.63	0.28	2.23	2.97	1.23	1.30	0.96	2.19	1.33
1 yr.— 1 yr. 11 mo.	32	1.23	1.50	0.84	1.04	0.51	0.38	0.37	0.43	0.36	0.45	0.23	0.63	0.23	2.03	2.61	1.33	1.21	0.84	1.95	1.66
2 yr.— 2 yr. 11 mo.	13	2.03	2.38	1.36	1.69	0.92	0.44	0.43	0.40	0.53	0.60	0.27	1.28	0.75	3.29	1.39	2.33	0.97	0.78	1.79	2.61
3 yr.	1	1.46	1.80	1.01	1.21	0.74	0.41	0.45	0.35	0.45	0.59	0.26	0.69	0.52	2.46	2.69	2.11	0.91	0.76	1.35	1.97
4 yr.— 4 yr. 11 mo.	6	0.86	0.99	0.58	0.67	0.31	0.34	0.27	0.44	0.28	0.37	0.32	0.23	0.12	1.57	2.45	0.76	1.23	0.90	1.91	1.09
5 yr.— 5 yr. 11 mo.	8	1.00	1.08	0.68	0.73	0.39	0.34	0.35	0.37	0.32	0.36	0.26	0.38	0.13	1.79	2.36	1.13	1.15	0.97	1.37	1.20
6 yr.— 6 yr. 11 mo.	12	0.97	1.24	0.67	0.87	0.53	0.35	0.32	0.39	0.29	0.37	0.18	0.46	0.30	1.88	2.55	1.44	1.20	0.89	2.12	1.32
7 yr.— 7 yr. 11 mo.	3	0.83	0.96	0.59	0.66	0.49	0.32	0.26	0.41	0.24	0.29	0.18	0.38	0.22	1.85	2.72	1.19	1.37	0.95	2.27	1.05
8 yr.— 8 yr. 11 mo.	4	0.87	0.89	0.61	0.69	0.50	0.31	0.21	0.45	0.21	0.21	0.21	0.48	0.20	1.93	3.30	1.10	1.52	1.00	2.21	0.98
9 yr.	1	0.84	1.00	0.53	0.68	0.32	0.35	0.31	0.41	0.31	0.32	0.29	0.35	0.04	1.51	2.19	0.78	1.13	0.97	1.41	1.11
10 yr.—19 yr. 11 mo.	13	0.86	0.95	0.63	0.69	0.50	0.31	0.25	0.39	0.23	0.26	0.20	0.43	0.23	1.98	2.82	1.27	1.37	0.99	1.87	1.04
20 yr. and over, max. 22 yr.	3	0.76	0.80	0.51	0.55	0.44	0.29	0.23	0.38	0.25	0.25	0.24	0.30	0.18	1.72	2.41	1.16	1.25	0.96	1.79	0.89

TABLE XVIII.

RELATION OF LIPOIDS TO PROGNOSIS.

		BLOOD LIPOIDS IN PER CENT.																			
		TOTAL-FAT		TOTAL FATTY ACIDS			LECITHIN			CHOLESTEROL			GLYCERIDES		T. F. A./L.			L./C.			TOTAL LIPOIDS
DURATION AFTER BLOOD WAS TAKEN TO DEATH, OR 1 JUNE, 1917.	NO. OF BLOODS	W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
Fatal																					
14 hrs.—16 d.	4	1.85	2.25	1.48	1.75	0.98	0.50	0.48	0.45	0.37	0.50	0.18	1.33	0.70	3.60	2.51	2.12	1.12	0.89	2.56	2.60
2½ m.—4 m.	4	1.54	1.75	1.19	1.65	0.95	0.39	0.32	0.50	0.36	0.44	0.26	0.96	0.63	2.92	3.91	2.00	1.17	0.78	2.12	1.89
8 m. 6 d.—9 m. 9 d.	6	2.95	3.62	2.27	2.28	1.40	0.47	0.51	0.34	0.67	0.85	0.30	2.19	1.64	4.84	5.45	3.81	0.72	0.63	1.44	3.88
Living																					
2 mos.	11	1.06	1.36	0.66	0.87	0.37	0.39	0.37	0.43	0.41	0.49	0.27	0.44	0.11	1.66	2.38	0.87	0.98	0.77	1.68	1.40
3 mos.	23	1.03	1.31	0.66	0.86	0.38	0.38	0.35	0.41	0.37	0.42	0.24	0.45	0.11	1.68	2.53	0.90	1.18	0.83	1.83	1.38
4 mos.	11	1.28	1.73	1.07	1.36	0.65	0.38	0.31	0.45	0.31	0.32	0.22	1.02	0.35	2.62	2.63	1.44	1.32	0.94	1.69	1 68
5 mos.	15	0.93	1.09	0.66	0.75	0.53	0.33	0.29	0.39	0.28	0.32	0.21	0.44	0.28	1.95	2.66	1.39	1.24	0.94	1.94	1.20
6 mos.	14	0.80	0.87	0.54	0.60	0.46	0.33	0.25	0.43	0.26	0.26	0.20	0.33	0.18	1.66	2.46	1.08	1.35	0.97	2.24	0.96
7 mos.	11	0.95	1.06	0.66	0.74	0.45	0.35	0.31	0.40	0.29	0.32	0.23	0.40	0.21	1.64	2.41	1.27	1.21	0.97	1.77	1.16
8 mos.	1	...	0.78	...	0.56	...	...	0.23	...	...	0.22	...	0.33	...	...	2.43	...	...	1.05	...	0.87
9 mos.	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 mos.	11	0.78	0.87	0.56	0.63	0.48	0.31	0.22	0.40	0.22	0.25	0.18	0.38	0.20	1.86	2.65	1.19	1.48	1.01	2.23	0.96
11 mos.	6	1.01	1.13	0.78	0.83	0.47	0.31	0.30	0.34	0.23	0.30	0.13	0.53	0.25	2.17	2.79	1.55	1.59	1.21	2.93	1.24
12 mos.	5	0.99	1.07	0.78	0.86	0.64	0.27	0.23	0.33	0.21	0.22	0.18	0.64	0.44	2.79	3.81	2.02	1.38	1.08	1.90	1.17

into three groups of odd periods, as seen in Table XVIII, while the living could be bunched symmetrically according to the number of months elapsed since the bloods were taken.

The dead show higher values than the living, most markedly in total-lipoids; 2, total-fat; 3, total-fatty-acid; 4, glycerides; 5, cholesterol; even 6, in lecithin rather strikingly.

(To be continued.)

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THE PROGRAM OF THE STATE DEPARTMENT OF HEALTH AGAINST VENEREAL DISEASE.

For the past three years the State Department of Health has been maturing a comprehensive program of attack on venereal disease.

Two and a half years ago the State Commissioner of Health, Dr. A. J. McLaughlin, instituted the policy of extending free Wassermann laboratory service to all physicians and institutions throughout the State.

At the 1916 session of the Legislature he asked and received authorization by a legislative resolve to expend $10,000 in research, and if successful to manufacture, for free distribution to the institutions and medical profession of the Commonwealth, salvarsan or any analogous product.

The laboratory experimentation has been successful, and a product which has been named "Arsphenamine" has been obtained and is now being produced on a wholesale basis.

Throughout this period the Department has studied and sought all possible information in reference to the advantages and disadvantages of requiring reports of venereal diseases in any form. It has also studied carefully the question of providing facilities for early diagnosis and prompt, efficient treatment that would be both easy of access, within the financial resources of all classes, and at the same time be as far as possible removed from the stigma of the traditional "Clap Clinic." It has also been a constant object to have such institutions so designed that they would form an integral part of the method of distribution of arsphenamine, that they would be as little as possible competitive so far as the private practitioner of medicine is concerned, and, above all, that they should be placed on a high ethical plane and serve as centers of education and prevention, as well as of cure.

The Department has always believed that logically the question of reporting should, chronologically at least, be taken up after the completion of the program for the extension of means of diagnosis and treatment. This is practically the same conclusion reached by the British Royal Commission on Venereal Disease.

Along with many other things, the effect of the war has been to "speed up" the order of development of the Massachusetts Venereal Disease Program, published on another page of this issue.

The War Department, in addition to its own comprehensive measures for keeping inefficiency from venereal disease among troops at a minimum, has strongly urged the extension of programs of reporting diagnosis and treatment, and of general education in reference to venereal disease, upon all civilian health authorities, as seriously needed war measures. Practically all the measures advocated by the War Department were already provided for in the plans of the Massachusetts State Health Department, but the medical profession is reminded that in a very vital sense this whole program has taken on an added national significance and has become a *war measure;* partly because of the strong stand taken in favor of such an immediate step by the Federal authorities, it has been decided to modify somewhat the original policy of procedure in one particular.

Instead of leaving the question of venereal disease-reporting until the machinery for arsphenamine distribution and the extension of diagnostic and curative centers, and of general popular education in venereal disease problems, was in smooth running order, it has been decided to launch the entire program simultaneously. The abnormal conditions resulting from the war demand the crowding into a few months of a program of development that in normal times might be better assigned to several years of gradual evolution.

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NURSES IN THE UNITED STATES ARMY.

THE United States Army is in need of nurses for immediate assignment to duty and for reserve. It is confronted by the task of increasing the enrolment nearly 1000% to procure 37,500 nurses, who will be needed for an army of 1,500,000. The present strength of the Army Nurse Corps is but 4000.

The need for nurses in Army hospitals in this country and for duty overseas is urgent, but the enrolment has not met the demands by a large number. Hospitals at National Guard and National Army camps still need 290 nurses to bring the quotas up to the necessary minimum of 65 nurses to each hospital.

Since the urgent need for more nurses was announced in December over 2000 requests for application blanks have been received; 400 nurses have applied for enrolment and many have been accepted. About 650 nurses have been obtained through the Red Cross during the same period.

The call to duty is made to every one of the 80,000 registered and 200,000 other graduate and practical nurses in the United States. That the enrolment has not been larger is due, it is believed, to the lack of realization by American nurses of the immediate need of their services. The Army Nurse Corps impresses the profession with the urgency of that need.

Besides the number needed for immediate assignment to duty, there must be a reserve for call when American casualties increase. As soon as the immediate needs of cantonment hospitals have been cared for, a reserve of 100 nurses will be organized for emergency service in the United States. The Lakewood Hotel at Lakewood, N. J., has been leased by the Government for use as a general hospital, and provisions will be made for housing nurses there.

Because of the immediate need of nurses and to encourage enrolments, a number of the requirements heretofore imposed have been waived.

Requests for information, applications and enrolment should be made to the Surgeon-General, U. S. Army—attention of Superintendent, Army Nurse Corps, Mills Building, Washington, D.C., or to the Director, American Red Cross Nurse Service, Washington, D. C.

◆

THE MILITARY SIGNIFICANCE OF CEREBROSPINAL MENINGITIS.

WHEREVER there is a great assemblage or concentration of troops the sanitary provisions must not only be pressed in every direction generally, but any special tendencies associated with such concentration must receive special attention. Measles, scarlet fever and pneumonia, although common, need no special attention. On the other hand, it has long been the experience in war times that cerebrospinal meningitis would break out in severe epidemic form in localities where it had, previous to concentration, rarely been known to occur. Such epidemics would then not be confined to the military population alone, but extend to the civilian population. Many epidemics are known to have swept European troops during previous wars, hence the name "troop disease" long associated with cerebrospinal meningitis. The disease seems to be very common in the infant population in civil life, and in troops no matter what the ages. The control of epidemics is not difficult when there is preparation for it. However, the severe outbreak of the disease among British troops in England in the winter of 1914 and 1915 was due to a lack of preparation. Horder notes that there was not even a manual published at the time by which the physician could be guided in preventive measures and in treatment. It must be remembered that not all cases of cerebrospinal meningitis have the classic symptoms or course commonly associated with the disease. The early symptoms or the whole course of a mild attack closely simulates an influenzal attack. Of course, where the disease is known to be epidemic, such symptoms will put everyone on guard, otherwise the true significance of such symptoms will be almost certain to be overlooked. Yet the same relation as exists between diphtheria and tonsillitis must be established between influenzal symptoms and cerebrospinal meningitis if the disease would be detected before epidemic proportions have set in. Both influenza and epidemic cerebrospinal meningitis are most common in the winter and spring seasons. Both of them are closely associated with disturbances located in the nasopharynx. Indeed, the exclusive habitat of the diplococcus of Weichselbaum seems to be in the nasopharynx. Cultures can easily be obtained from this locality in active cases and from carriers. Cultures can be obtained positive very early in the disease, and in the mild as well as the severe cases. In the later stages of the disease the coccus begins to disappear from this locality. But the carrier may have it a long time, and he is believed to be the factor in keeping the disease alive in a community. The detection of the carrier is the most important problem in the suppression, but without this detection progress must be unsatisfactory. The mildness of the disease in one individual is no indication of the severity of the disease he will transmit.

For the detection of carriers or the mild and transitory cases, it is necessary to make frequent cultures from the nasopharynx of those suspected of harboring the diplococcus. Isolation must follow the detection of such an individual. For active treatment nothing holds forth so much hope as the serum treatment of Flexner; but it must be given early if the mortality would be reduced within reasonable limits. Where the serum was given between the first and the third days, Flexner found that the mortality was reduced to 18%. After the seventh day the mortality rose to 36%. The serum treatment of cerebrospinal meningitis has reduced the general mortality from 80 to 30%. Greater reduction can be expected only when every influenzal condition in a suspected area will mean a culture, and if positive, immediate isolation and serum treatment. This disease being primarily a catarrhal affection, is spread by the so-called "droplet" method. The secretions of the nasopharynx are carried to sensitive individuals by contact, by coughing, sneezing, etc. The education of the public against such bad habits, in respect to the careless dissemination of secretions from this locality during catarrhal attacks, or even during apparent health, will do much to reduce the morbidity from this disease. In respect to the prevention of this disease, the substitution of the tent and shack for the barracks will do much to eradicate this disease from among them.

TREATMENT OF LEUKEMIA.

ALTHOUGH the exact provocative agent or condition in leukemia is as yet unknown, it is understood that the disease is due to some pathological disturbance in the blood-forming system which causes numerous mature and immature leucocytes to enter the blood stream. The blood-picture caused thereby is both interesting and familiar to nearly every observer. The change in the blood-picture is, of course, both as to quality and quantity, both having almost the same importance, but differing somewhat according as one blood-forming tissue or another is more affected. The treatment of this disease has thus far been very unsatisfactory. The particular type of leukemia found in any case is governed by hyperplastic changes in the splenomyelogenous or lymphatic tissues, as the case may be. The aim of treatment would seem to be a destruction of these hyperplastic elements and a regeneration of the blood-forming elements so that they would produce only stable and resistant cells. While hypoplasia can readily be produced by some form of therapeusis, unless the blood-forming elements are themselves regenerated there is recurrence, and often with markedly increased severity; and it is toward this latter aim that more certain therapeutic measures must be found. It had long ago been observed that after acute infectious diseases arising in leukemic individuals there occurred marked remissions in this disease, probably because of the destructive effect on the cells by the infective organism or the inhibitory effect of the toxin on the blood-forming system. Arsenic, likewise, has caused much improvement in the disease, but only of a temporary character. Tolerance to the drug or the fact that arsenic is not definitely and selectively destructive to these tissues may account for the absence of any lasting value.

The first great step in the treatment of this disease was made, however, by the Roentgen rays. It seems that the effect of these rays is to cause a most rapid degeneration of the cells, so that they die in a very short time, or they may even be killed outright on the application of the rays. But after the prolonged application of the Roentgen rays to the blood-forming tissues, the spleen, bone marrow or lymphatic glands, there occurs a readjustment to this destructive effect of the rays, and although the young and the parent cells are diminished, their production is not checked altogether, but the cells produced are more resistant types. The progress of the leukemia is slowed, but not destroyed. On the other hand, this slowing may even be followed later by a greatly increased activity in cell production and a severe relapse.

But the observation of von Koranyi on the effect of benzol poisoning on girls employed in the factories utilizing this chemical, gives hope that at last a more certain form of treatment has been found. Von Koranyi found that the drug first stimulated the marrow to leucocytic action, but that later there occurred a distinct hypoplasia. If employed to excess, the aplastic anemia can be fatal. In the treatment of this disease with benzol, symptoms of poisoning must be carefully watched, and when there are headache, anemia, bladder and kidney irritation the drug must be discontinued for a long time, because its action lasts a long time after discontinuance. The reduction of the white blood cells to below 20,000 must be the lowest limit of therapeutic application. It seems that, while the action of benzol is much slower than the Roentgen rays, its effect is more lasting and more certain, especially in the chronic stages of the disease. The best results will probably be obtained by the use of both therapeutic measures,—benzol and the Roentgen rays,—but the effect must be carefully watched. It is essential that blood examinations be frequently made, so that treatment is not continued beyond a safe reduction of the cell count. Yet, in spite of the good results with benzol reported by some observers, it is too early to say whether results will be lasting or whether a specific has been unearthed for the treatment of this serious malady.

MILITARY PSYCHIATRY.

Early in the present military scheme it was realized that the mental development and the mental prophylaxis and treatment of the soldier are an essential part of military medicine in order to get the greatest military efficiency. It is not sufficient that the soldier is fit physically but he must at least be normal as to his mental capacity and be free from active mental disorder. It is even necessary to go further in order to discover such latent mental possibilities as might become patent under the rigors of military life. In keeping with the highly specialized devices of modern warfare, the mental requirements of the soldier must rise accordingly, lest his availability be much restricted. American recruiting officers are now paying much attention to weeding out the mentally unfit from entrance into military life. Schier (*U. S. Naval Bulletin*, July, 1917) found that of those accepted as physically eligible by recruiting officers, about 12% fell below requirements mentally. Of course the detection of the feeble-minded is necessary because of the effect upon efficiency and discipline a few feeble-minded soldiers would have upon a military unit, but it is more important to detect them because it is shown by tests that so many of the apparently feeble-minded are either frank cases of dementia precox or are feeble-minded but with a dementia precox engrafted during service; and the care of an insane soldier is more trying, at least, than any other casualty. Most of the engrafted cases of dementia precox conform to the milder type known as hebephrenia, and it is for this reason that they are so likely to escape detection as insane.

Perhaps more important from a recruiting standpoint than the detection of frank cases of feeble-mindedness or insanity, is the detection of the psychopathic personality, in whatever form manifested. This is always a difficult task, even for the trained psychiatrist, but it is important, nevertheless, because the discipline, the stress, or any necessary repression, would be a sufficient provoking force to create an active psychosis. But while the recruiting officer must be on the alert to exclude the defective, he must be just as alert in detecting the malingerer among those who try to feign defect or mental disorder in order to escape military service. Yet when both these eventualities have been settled by careful regard for mental conditions, the presence of mental conditions among a military force must be regarded as the normal incidence among any people, even in civil life. The new and unusual circumstances under which a soldier must live may produce some mental disturbances that would otherwise not occur. Moreover, because of the high pressure in which the medical and surgical work must be done during active military operations, this type of morbidity is undetected or, if detected, must go unprovided for. It is for this reason that the Surgeon-General of the Army has established a psychiatric arm to the medical organization. It is intended that each medical unit have among its personnel neuro-psychiatrists, who would be useful not only in the detection and in the treatment of the mentally ill, but would be a valuable asset in developing mental hygiene among the soldiers and in indicating the methods for the reduction of the psychogenic factor in military life. It is known that certain psychological factors, in respect to tools, working time, environment, etc., influence the efficiency and well-being of the worker in industrial pursuits, and the same principle in respect to military life can be developed by the psychiatric units. Such determinations, together with the general care and the treatment of the mind of the soldier, would go a long way to eliminate much of the post-bellum mental disturbances, for which the soldier must be mustered out and cared for, and which unnecessarily help to swell the already too crowded class of the insane.

MEDICAL NOTES.

WAR NOTES.

Need of Nurses in Government Service.—Announcement comes from Washington that the Army has only 3600 nurses enrolled for Government service, while on the basis of an Army of 1,500,000 men there will be a need of 37,500 nurses. There are between 80,000 and 90,000 registered nurses in the country and about 200,000 other graduate and practical nurses. Hospitals at National Guard and National Army camps still need 371 nurses to bring the quotas of all up to the minimum of 65, considered necessary for each.

Anxiety about American Physician.—Dr. William S. Thayer of Johns Hopkins University, who went to Russia with a medical commission, has not been heard from for some time, and it is feared that he may be in danger.

Deaths among American Troops in France.—Report from General Pershing, made public on January 2, stated that there had been 24 deaths among American troops and one death of a nurse. Pneumonia and its complications were responsible for 11 deaths, meningitis for 4, and tuberculosis for 1.

Deaths among American Troops in Army Cantonments.—Report for the week ended December 22 states that in the National Army there were 118 deaths, as against 97 for the week before, and in the National Guard 120, as against 165 for the week previous. Between the dates of September 21 and December 14 there were 1391 deaths in the Regular Army, the National Army and the National Guard. Of that number, there were 144 deaths in the Regular Army, which had an average strength of 202,009 men in the United States; 494 deaths in the National Army, which had an average strength of 387,233 men in the United States; and 753 deaths in the National Guard, which had an average strength of 327,480 men in the United States.

Innovation on Hospital Ships.—Two hospital ships which are being equipped for the use of the Navy will carry women nurses, for the first time in the history of the American Navy. The ships will be called the *Comfort*, formerly the Ward liner *Havana*, and the *Mercy*, formerly the *Saratoga* of the same line. The ships will accommodate 300 patients each. Surgeon R. C. Holcomb, now assistant to Surgeon-General Braisted, will command the *Comfort* and Medical Inspector Norman J. Blackwood, now in charge of the hospital ship *Solace*, will have charge of the *Mercy*.

War Relief Funds.—On January 12 the totals of the principal New England war relief funds reached the following amounts:

Armenian and Syrian Relief ...	$278,875.37
Italian War Relief	122,292.43
Friends of Poland	96,387.73

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending January 5, 1918, the number of deaths reported was 298, against 317 last year, with a rate of 19.81, against 21.40 last year. There were 49 deaths under one year of age, against 33 last year.

The number of cases of principal reportable diseases were: diphtheria, 104; scarlet fever, 23; measles, 117; whooping cough, 1; typhoid fever, 1; tuberculosis, 38.

Included in the above were the following cases of non-residents: diphtheria, 9; scarlet fever, 5; tuberculosis, 2.

Total deaths from these diseases were: diphtheria, 15; scarlet fever 1; measles, 4; whooping cough, 1; typhoid fever, 1; tuberculosis, 21.

Included in the above were the following non-residents: diphtheria, 2; measles, 1; tuberculosis, 1.

Hospital Bequests.—By the will of the late Zenas Crane of Pittsfield, Mass, the House of Mercy Hospital of that town receives a bequest of $25,000. By the will of the late Charles C. Barney of Brookline, the following institutions will receive $1000: Boston Home for Incurables, Massachusetts Society for the Prevention of Cruelty to Children, New England Peabody Home for Crippled Children, Massachusetts Society for the Prevention of Cruelty to Animals, and the Boston Nursery for Blind Babies. Upon the death of the last beneficiary the estate will be divided between the Massachusetts General Hospital and Harvard College.

The Massachusetts Medical Society.

NOTES FROM THE DISTRICT SOCIETIES.

District Correspondents.

Bristol North, Arthur R. Crandell, M.D., Taunton.
Berkshire, A. P. Merrill, M.D., Pittsfield.
Bristol South, Edwin D. Gardner, M.D., New Bedford.
Essex North, T. N. Stone, M.D., Haverhill.
Essex South, H. P. Bennett, M.D., Lynn.
Hampden, Laurence D. Chapin, M.D., Springfield.
Hampshire, E. E. Thomas, M.D., Northampton.
Middlesex South, William C. Hanson, M.D., Belmont.

Hampden District.—The regular meeting of the Hampshire District Medical Society was held January 10. Dr. S. A. Clark addressed the meeting on Pulmonary Embolism. Voted that the members absent on war service be exempted, if they so desire, from special assessments.

C. T. Cobb,
Secretary and Correspondent, pro tem.

Obituary.

SAMUEL WILLIAM TORREY, M.D.

Dr. Samuel William Torrey, a retired Fellow of the Massachusetts Medical Society, died at the Beverly Hospital after a short illness January 1, 1918, at the age of 74.

He was the son of Dr. Augustus Torrey of Beverly, who died in 1880 at the age of 75, and was educated at the University of Vermont, receiving an A.B. in 1865 and an M.D. three years later from the College of Physicians and Surgeons, New York. He had practised in Beverly all his life, retiring in 1909. He was one of the founders of the Beverly Hospital and had served on the school board. He is survived by five married daughters.

ROYAL HATCH, M.D.

Dr. Royal Hatch, chairman of the board of health in Wellesley, died at his home in that town, Dec. 30, 1917, after an illness of two weeks. Pneumonia was the cause of death. Dr. Hatch was born thirty-nine years ago in Strafford, Vt., and attended St. Johnsbury Academy. He was graduated from Dartmouth in 1900, and from the Harvard Medical School in 1904. While at Dartmouth he was prominent in athletics. After graduating from Harvard, he was house officer and later assistant superintendent at the Massachusetts General Hospital. He specialized in tuberculosis, and maintained an office in Newbury Street, Boston. About nine years ago he removed to Wellesley and engaged in general practice. Dr. Hatch leaves a wife, who was Miss Edith Noera of Waterbury, Conn, and two small children.

He was a Fellow of the Massachusetts Medical Society and a member of the American Medical Association.

Miscellany.

THE MASSACHUSETTS VENEREAL DISEASE PROGRAM.

By Eugene R. Kelley, M.D.

The Massachusetts Venereal Disease Program may be separated into four general divisions:

1. Venereal Disease Reporting.
2. The Problem of Extension of Facilities for Diagnosis and Early Treatment.
3. Repressive Measures.
4. Educational Measures.

I. VENEREAL DISEASE REPORTING.

On December 18, 1917, the Public Health Council of the State Department of Health voted to add gonorrhea and syphilis to the list of diseases declared dangerous to the public health.

This question of requiring the venereal diseases to be reported has created a very vigorous controversy during the past few years throughout the world. California, several years ago, required by regulation of the state board of health that cases of gonorrhea and syphilis should be reported by serial number or initials. Several states and municipalities have followed this example. Vermont has the distinction of being the first state or province in North America to require by statute that all cases of venereal disease be reported by name direct to the state board of health, a law requiring this going into effect in 1915. A similar law was enacted in New Jersey during 1917.

Many serious objections have been raised to all proposed schemes for reporting venereal diseases by name of patient. Many of these are obvious to the medical mind at a glance. The social and moral stigma associated in the public mind with venereal infection is at the bottom of all such objections and constitutes the reason why all attempts to solve the problem of venereal disease reporting make a sharp distinction between these and the other communicable diseases.

The arguments against venereal disease reporting may be summarized in the language of a member of the English Royal Commission on Venereal Diseases. He says in substance:

The fundamental objects of notification of cases of communicable diseases are: (*a*) discovery of foci; (*b*) isolation of patient to prevent him from becoming a focus; (*c*) disinfection measures, principally directed against surroundings.

Notification, he argues, will not serve for the first object; that if it did, isolation is not needed for venereal diseases; and that as far as disinfection goes, it is the patient and not his surroundings which need disinfection, or in other words, treatment to render him non-infective.

The Commission also rejected modified or anonymous reporting schemes as furnishing only misleading statistical information.

Nevertheless, the British Royal Commission conclude that with this extension of popular knowledge regarding venereal diseases "it is possible that notification in some form will be demanded." Incidentally it may be said that such a popular demand is rapidly coming to the fore in England, largely as a result of war conditions.

The objections summarized by the Royal Commission are weighty, their argument which underlies all objections being that if the public knew that cases would be reported by registered ethical physicians, patients would tend to seek irregular or quack treatment, or ignorantly attempt self-medication, with far worse results than at present come even from these two evils. It has also been argued that reporting would provide many opportunities for blackmail, etc.

Certain it is that, from their nature, any public health measure relating to venereal diseases which preserves the confidential character of the physician's relation to his patient is to be desired. On the other hand, society as a whole is entitled to statistical knowledge of the prevalence of these diseases, and also an assurance that all cases are being adequately treated, and hence rendered non-infective. If adequate treatment cannot be guaranteed, the authorities should have knowledge of that class of the venereally infected and interfere, forcibly if need be, to see that they cease to be foci of infection.

In 1915 the state of West Australia passed a statute which makes the contracting of a venereal disease a felony if the infected person fails forthwith to place himself under adequate medical care; which requires physicians to report by number all new cases; which requires physicians to notify each other when a patient changes medical advisers; and finally, which requires physicians to report name and address of patient only in case the patient ceases to report for treatment and no notice of change of medical advisers is received from another physician within a definite period of time.

This scheme of conditional notification has been adopted by many communities all over the world, in modified forms. It is the universal rule, also, that reports are made directly to the state health authorities.

After long study, the above-outlined scheme appeared to the State Department of Health of Massachusetts to be the one method promising best results, and the following Regulations governing the method of reporting gonorrhea and syphilis, based upon the "West Australian" idea, were adopted at the same meeting of the Public Health Council of the State Department of Health at which these diseases were declared dangerous to the public health.

REGULATIONS GOVERNING THE REPORTING OF GONORRHEA AND SYPHILIS.

1. Gonorrhea and syphilis are declared diseases dangerous to the public health, and shall be reported in the manner provided by these regulations promulgated under the authority of Chapter 670, Laws of 1913.

2. Gonorrhea and syphilis are to be reported (in the manner provided by these regulations) on and after February 1, 1918.

3. At the time of the first visit or consultation the physician shall furnish to each person examined or treated by him a numbered circular of information and advice concerning the disease in question, furnished by the State Department of Health for that purpose.

4. The physician shall at the same time fill out the numbered report blank attached to the circular of advice, and forthwith mail the same to the State Department of Health. On this blank he shall report the following facts:

Name of the disease.

Age.

Sex.

Color.

Marital condition and occupation of the patient.

Previous duration of disease and degree of infectiousness.

The report shall not contain name or address of patient.

5. Whenever a person suffering from gonorrhea or syphilis in an infective stage applies to a physician for advice or treatment, the physician shall ascertain from the person in question whether or not such person has previously consulted with or been treated by another physician within the Commonwealth and has received a numbered circular of advice. If not, the physician shall give and explain to the patient a numbered circular of advice and shall report the case to the State Department of Health, as provided in the previous regulation.

If the patient has consulted with or been treated by another physician within the Commonwealth and has received the numbered circular of advice, the physician last consulted shall not report the case to the State Department of Health, but shall ask the patient to give him the name and address of the physician last previously treating said patient.

6. In case the person seeking treatment for gonorrhea or syphilis gives the name and address of the physician last previously consulted, the physician then being consulted shall notify immediately by mail the physician last previously consulted, of the patient's change of medical adviser.*

7. Whenever any person suffering from gonorrhea or syphilis in an infective stage shall fail to return to the physician treating such person for a period of six weeks later than the time last appointed by the physician for such consultation or treatment, and the physician also fails to receive a notification of change of medical advisers as provided in the previous section, the physician shall then notify the State Department of Health, giving name, address of patient, name of the disease and serial number, date of report and name of physician originally reporting the case by said serial number, if known.

8. Upon receipt of a report giving name and address of a person suffering from gonorrhea or syphilis in an infective stage, as provided in the previous section, the State Department of Health will report name and address of the person as a person suffering from a disease dangerous to the public health, and presumably not under proper medical advice and care sufficient to protect others from infection, to the board of health of the city or town of patient's residence or last known address. The State Department of Health shall not divulge the name of the physician making said report.

MORTALITY STATISTICS FOR 1917, FROM THE HEALTH DEPARTMENT, BOSTON.

The records of the Boston Health Department for the year 1917, just closed, show that 12,721 deaths occurred, against 12,769 for the year 1916. The number of non-resident deaths, which are increasing annually, were 1859, against 1797 for 1916, and comprise 15% of the total number of deaths recorded. The death rate for the year 1917 is 16.47, as against 16.79 in 1916, and is one of the lowest rates ever recorded in this city. Deducting the non-resident deaths, the corrected rate is 14.06, against 14.43 in 1916.

The deaths of children under one year numbered 1965, against 2055 in 1916, giving the low rate of 99.1 per 1000 births. The rate in 1916 was 104.6, and back in 1872, when these statistics were first compiled, the rate was 230. This is the first year in the history of the city of Boston when the number of deaths of infants under one year of age is under 100 per 1000 births. Moreover, of this number there were 385 non-resident babies, comprising 20% of the total, brought to Boston for treatment. Deducting this number of non-resident deaths of infants, the corrected rate is 79.7 per 1000 births.

Although Boston in 1916 led the large American cities as regards the low rate for typhoid fever, this year, 1917, a further decrease is noted, there being 22 deaths from this disease, as against 26 in 1916, giving a death rate of 28 per 10,000 of population, against .34 in 1916. Of this number 5 were non-residents, and deducting these would lower the rate to .22 per 10,000 population.

The following figures are the death rates of the other communicable diseases as compared with 1916 (per 10,000 pop.).

	1917	1916
Whooping cough	.57	.97
Typhoid fever	.28	.34
Diphtheria	3.57	2.43
Scarlet fever	.60	.51
Pulmonary tuberculosis	14.95	14.62
All forms tuberculosis	17.08	17.33
Measles	1.31	1.41

The following table will give the number of deaths from the principal causes for the year 1917, as compared with 1916, and also the number of non-residents in these causes for the year 1917:

Some of the Principal Causes of Death in 1916 and 1917, with Non-Residents.

	1916	1917	Non-Residents
Anterior poliomyelitis	168	4	3
Cererospinal meningitis	45	54	13
Diphtheria	185	276	72
Measles	107	101	13
Scarlet fever	39	46	14
Tuerculosis (pul. and laryng.)	1112	1155	105
Other tubercular	206	164	50
Typhoid fever	26	22	5
Whooping cough	75	44	3
Alcoholism	162	163	26
Diabetes	192	148	21
Appendicitis	107	128	28
Bronchitis	119	108	5
Cancer	868	916	176
Bronchopneumonia	619	505	34
Pneumonia	1012	1096	91
Influenza	80	51	..
Syphilis	72	87	14
Diarrhea and enteritis (under 2 yrs.)	356	406	91
Diarrhea and enteritis (2 years and over)	63	98	17
Old age	18	35	..
Premature birth	399	371	63
Puerperal diseases	130	173	39
Arteriosclerosis	283	401	33
Cerebral hemorrhage and softening	567	710	56
Bright's disease	888	787	76
Heart disease	1688	1603	122
Suicides	124	134	29
Homicides	30	27	6
Illuminating gas poisoning	54	59	3

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* Note: In asking physicians to carry out the provisions of this section, the State Department of Health appreciates that it is asking more than is authorized by the authority of Chapter 670, Laws of 1913. This courtesy is requested, however, in the interest of the public health and to protect the individual who has conformed with the regulations laid down for him.

Accidental drowning	58	55	19
Traumatism by fall	200	222	45
Elevator accidents	11	24	5
Electric railway accidents	72	26	7
Motor vehicle	73	82	15
Steam railroads	64	40	16
Teams	30	19	3

The figures for the year 1917 show not only a lower death rate, but an actual decrease in the total number of deaths over the previous year. This is a most interesting and encouraging sign.

The typhoid fever figures are gratifying in so far that in 1916, Boston led in this respect all the large cities in America, and it is hoped that with this further decrease it will hold its place in the forefront of progress in matters of health,—inasmuch as typhoid fever rate is the best index of the sanitary condition of a city and the endeavors of its health officials.

Pulmonary tuberculosis shows a slight increase but, on the other hand, all forms of tuberculosis show a decrease. Much time and endeavor has been spent in tuberculosis work. Constant supervision is kept over each case in Boston, and to our knowledge, there is not a neglected case of tuberculosis in Boston that is in need of hospital treatment. Regular and constant visits are made to each case by nurses and physicians of the city departments, and conditions noted, both as regards their physical condition and the conditions at home under which they live.

Diphtheria shows an increase, and it might be said that during the past year this disease has been unusually prevalent, not only throughout the State, but all over the country. The department has during the year urged physicians to use antitoxin immediately upon diagnosis, and to be on the watch for "carriers," so dangerous in a community in the spread of a disease. Antitoxin is provided free of charge, and hospital facilities are provided for all patients who cannot be properly treated at home.

Whooping cough shows a decrease over 1916, and with the opening of the new ward of the city of Boston, the first of its kind in the country, additional improvement is looked for in 1918.

Scarlet fever shows a slightly higher rate, and measles lower than in 1916.

During the year 1917, there were but four deaths from infantile paralysis, and three of these were non-residents, against 168 in 1916.

Pneumonia continues to exact its toll in increasing numbers. Broncho-pneumonia and lobar pneumonia, combined, show an increase of thirty deaths over 1916, the figures being 1601 and 1631. Pneumonia is unusually prevalent all over the country, and even in the military camps of the government. Modern methods of serum treatment for this disease, which are about to be introduced, will be of great assistance to health officers all over the country in combating pneumonia.

The decrease in the number of infants under one year of age and the corresponding low death rate is especially gratifying, and is due to the coöperation and excellent work of the many charitable and philanthropic associations, organizations, clubs, etc., that are coöperating with the Health Department in this great campaign for baby-saving that has been carried on for several years past. Results are now beginning to show, and the interest that has been awakened among the mothers and the physicians by all agencies that have so earnestly and generously worked towards this great and common end has been productive of results. Education, advice, literature, instruction, teaching and the public press have all played a great part in this work, and all who have worked for baby-saving are to be congratulated for the wonderful showing of 1917,—a goal that has long been our aim.

This work has not been without its handicaps, such as the extreme periods of heat last summer, the high and increasing cost of foodstuffs, particularly milk, the babies' food, clothing and fuel, and the cold of early winter. These obstacles that have been placed in the path of baby progress have happily been overcome. It is not sufficient that this work should stop here, but the good results should act as a stimulus to strive for even better figures for the coming year. This work will be difficult in view of the industrial and economic conditions all over the country, but every effort is worth making when we know the reward is the saving of an infant's life.

NOTES ON BIOLOGIC PRODUCTS FROM THE STATE DEPARTMENT OF HEALTH.

DIPHTHERIA ANTITOXIN.

All the good parchment paper used in dialyzing serum was formerly obtained from Belgium. When this supply was cut short on account of the war, it became necessary to issue unconcentrated normal serum. In consequence of the larger amount of foreign protein injected into the body with the normal antitoxic serum, the number and severity of urticarial rashes which accompany serum sickness became manifest. Recently it has been possible to obtain parchment paper, and all the serum is now dialyzed and concentrated, and there should, therefore, be an improvement in the matter of serum sickness following the injection of antitoxins.

Formerly, prophylactic doses of diphtheria antitoxin were issued in 750 unit packages and 1500 unit packages. Hereafter, these two packages will be discontinued, and a prophylactic dose containing 1000 units will take their place. This is usually a sufficient immunizing dose for a child. There are now available, therefore, packages of 1000, 3000, 6000 and 12,000 units, the latter for hospital use only.

Request is again made that all empty bottles, vials, boxes, cartons, unused vaccine tubes and containers be returned to the laboratory. The increased cost of these supplies makes it imperative to practise the strictest economies.

TYPHOID AND PARATYPHOID PROPHYLACTIC.

Attention is invited to the fact that the laboratory now makes and distributes the triple vaccine, containing Bacillus typhosus, Bacillus paratyphosus A. and Bacillus paratyphosus B. The reaction following this triple vaccine is not appreciably different from that of the vaccine containing typhoid bacilli alone. It protects against both typhoid fever and paratyphoid fever, and is therefore recommended. Those who have been vaccinated against typhoid fever may subsequently be vaccinated with paratyphoid vaccines, and vice versa. These vaccines may be had singly or in combination, but it saves time and trouble to give the three in one.

DIPHTHERIA PROPHYLACTIC.

The Division of Biologic Laboratories is now also prepared to issue under certain restrictions the antitoxin-toxin mixture for active immunization against diphtheria. This is a useful method for protecting adults as well as children. It should be used only in conjunction with the Schick test. Application for Schick material and antitoxin-toxin mixture should be made to the State District Health Officers.

TUBERCULOSIS AND THE WAR.

In an interesting memorandum entitled "The Influence of War Conditions upon the Death Rate from Consumption," Kerr, the able health officer of Newcastle-upon-Tyne, England, gives a summary of the tuberculosis statistics of his city for the past five years, and shows that the number of deaths from pulmonary tuberculosis has increased, both numerically and relatively, since the outbreak of the war. The following table is reproduced:

TOTAL DEATHS FROM PULMONARY TUBERCULOSIS.

YEAR	ESTIMATED POPULATION	DEATHS
1913	271,295	326
1914	271,523	375
1915	278,107	380
1916	272,259	407
1917*	?	246

* January to June.

According to Kerr, "all the European nations participating, however slightly, in the war have suffered a definite and, in the case of the chief belligerents and those whose territory has suffered most, an alarming increase in the deaths from pulmonary tuberculosis among their civil populations. Great Britain has suffered the least so far in every way, including this, but even so, her tuberculosis toll has risen perceptibly, and this is readily seen in the industrial areas such as our own city."

Among the chief conditions which are specially likely to render persons most susceptible to contract and succumb to tuberculosis of the lung, Kerr gives first place to poverty, either actual or relative, to a rising cost or scarcity of food and other necessities of life. Next in importance he places bad or insufficient housing, with resultant overcrowding and lack of fresh air. Concerning overstrain, either physical or mental, placed third in order of importance, he says: "Practically the whole civil population is suffering from overwork or anxiety of mind. The former has undergone recent amelioration in the munitions factories since the Government has begun to realize the fact that overwork and overstrain of employees is unprofitable, and that a six-day week yields better work returns than a seven-day one."

The influence of employment, Kerr shows, is well reflected in the "considerable increase in the number of deaths among that section of the civil population which has been specially affected by the new conditions of life brought about by the war, viz.: girls at ages between 15 and 20 years, who have so nobly filled the gaps in factory, shop, office, and even in the heavier out-door employments, caused by the absorption of the able-bodied man into the army. So great a change, at the most susceptible period of life, cannot but have left its mark, and this is seen in the great rise in deaths from consumption among the young women."

This study emphasizes anew the intimate relation existing between economic conditions and pulmonary tuberculosis. They lend weight to the contention that the initial infection in tuberculosis is in infancy, and that the development of manifest disease in later life is due to other factors, largely economic, which operate by breaking down the resistance of the infected individual. A consideration of the facts here presented is commended to the attention of those superficial students of medicine who consider that the etiology of tuberculosis begins and ends with the tubercle bacillus.

SOCIETY NOTICE.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.—The regular Midwinter Meeting of the Society will be held at the Boston Medical Library on Wednesday, January 16, 1918, at 12 o'clock noon.

Business: Report of committee on question of financial assistance of those who enlist.

Paper: Dr. Frederick T. Lord will speak of his experiences as a member of the American Red Cross Committee to Serbia.

Lunch will be served at 1.15 p.m.

LYMAN S. HAPGOOD, *Secretary.*

The Boston Medical and Surgical Journal

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Address.

RESEARCH PROBLEMS IN TUBERCULOSIS.*

BY EDWARD R. BALDWIN, M.D., SARANAC LAKE, N. Y.,
Director of Trudeau Foundation.

IT may be wondered why there are many questions about tuberculosis, related to its causes, that remain to be answered. Everyone readily understands that a specific preventive or curative treatment awaits discovery, yet fails to realize that many pathways need exploration, which may lead us more surely to the goal of prevention, if not a cure.

This is one reason why the close study of a community, under the admirable system inaugurated here, has a special value for the student of tuberculosis problems. What are these problems?

I shall try to indicate a few of the most important ones without indulging in overtechnical terms,—often feared not only by a lay audience but also by doctors whose work is in the arduous daily and nightly visitation of the sick.

I think that there are three main classes of problems that may be taken as applying to all diseases to a greater or less degree.

First, there are the fundamental causes of disease, their origin and the reasons for their existence.

Second, the natural and acquired resistance to disease.

Third, the best methods of prevention and treatment.

In reference to tuberculosis, we already know the nature and actual infective agent in its causation, but we need more light on the origin of the germ. We should like to know why some tubercle bacilli are more virulent than others, and how to distinguish them. We now recognize three main varieties,—those of the human, bovine, and the fowl. There are evidences of intermediate varieties, and yet the main divisions do not change into one another.

Painstaking study has been made and is still in progress to recognize the nature of virulence, *i.e.*, the disease-producing powers of tubercle bacilli. With this knowledge in our possession one can comprehend the advantage of estimating the seriousness or mildness of any individual case of disease.

While tuberculosis does not develop without the bacillus, the body has also to be adapted in some way to form a culture-ground for the germs. It is thus evident that the old inheritance idea may not be wholly cast out. A more fundamental study of heredity is, therefore, important. This will involve especially a comparison between families who have had the disease with those who escape.

In addition to inheritance, there are broad problems of race, soil, climate, geographic position, diet and habits, as well as chemical and, possibly, physiological functions, that are closely connected with the development of the disease. Much importance was attributed to predisposition to tuberculosis in past years. It is now known that infection is possible to all, and a predisposition is not necessary for it to take place. The result of the infection, however, is probably greatly dependent on still unknown factors of chemical or vital nature.

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* Read at a meeting of the Framingham Medical Club held under the auspices of the Framingham Community and Tuberculosis Experiment Committee of the National Association for the Study and Prevention of Tuberculosis, Framingham, Massachusetts, November 1, 1917.

Infection, therefore, may result in disease or in an insignificant healed nodule never to become the source of further trouble. Why this happens to be serious in the first instance and harmless in the second is more or less a matter of speculation at present. By careful studies of the lives and habits of groups of individuals known to have the infection, but not diseased in the sense of recognizable illness, we hope to elicit some laws which can govern our policies in the prevention of tuberculosis. Here again the conclusions of the community studies may lead to fuller knowledge. On a still larger scale, the records being made by the new armies, by means of more careful examinations than hitherto had been possible, promise to be helpful.

To return to the subject of the varieties of the tubercle bacilli which afflict mankind: It is now a pretty well-established fact that a small percentage (from 6% to 12%) of tuberculous children become infected with bovine bacilli. It varies with different countries and localities. The chief question is: What becomes of the children who recover from the bovine infection? Do they form many of the victims of pulmonary tuberculosis who later acquire the human type of bacilli? It has been exceedingly difficult to find the bovine bacilli in persons who have pulmonary tuberculosis, yet there is no proof that the bovine change into human bacilli while in the human body. The fowl tubercle bacillus is seldom, if ever, the source of danger to mankind, but this also is not satisfactorily settled.

More information is also needed about the age when infection takes place which leads to disease. This is also bound up with questions of race and exposure to infection, the way in which the bacilli find access to the body, and their amount. Some knowledge of these points is obtainable by experimentation and some by observations of years on individuals who have never encountered the bacillus in childhood.

The frequency of adult infection is an important question, as it appears to be relatively infrequent. In most instances of pulmonary tuberculosis it is possible to say that the infection might have occurred in early childhood and youth. On the other hand, such early infections very frequently never spread, leaving one to suspect a second-infection as the cause of the ultimate disease.

Whether the bacilli are transmitted directly or not from the mother to the unborn child is a problem that has been fought over for many years. It is known to be possible, but in only a few cases has it been demonstrated. Some color is still left in the idea of such direct inheritance, but it lacks experimental proof and is not seriously held responsible for many cases of tuberculosis.

There are certain periods of life when the disease develops with greater frequency, especially at puberty and in females at childbirth and the menopause. The explanation of these facts is largely guess-work at present, and more intimate knowledge of the physiological and chemical changes taking place may enlighten us. Medical science has expanded its field very much, and in recent years new principles have been discovered that throw into relief new points of view, where obscure ideas prevailed in the past. It is especially in reference to these life-periods when profound changes do take place that modern physiology points to the influence of the so-called internal secretions. Whether from an excess or a lack of some substance tuberculosis is favored, is a distinct problem now being studied.

In addition to these questions as to the age at which infection takes place and the number of times it may happen, there is the determination of the pathways by which it gets in. In this problem we have one of the greatest importance in devising means of prevention. Very much experimental study has been given it, and yet there remain further points to be cleared. In general, one may say the fact is sufficiently well established that inhalation of either dry bacilli in dust or moist bacilli in the form of spray causes most of the infections. The track which they follow after getting into the body through the lungs or intestine is still being studied, and there are probably unusual pathways into the body, such as the skin, the gums, and the inside of the mouth.

These points are more or less important, especially in relation to young children.

The relation of infection to occupations and racial customs and habits is another phase of the same subject. Some trades, such as that of the coal miner, have very little tuberculosis; others no more dusty have a very much larger percentage, possibly because of some peculiarity of the dust. Comparatively little is as yet known of the cause of the high death rate in some dusty trades, and experiments are needed to aid the solution of such questions. Mortality figures give evidence of the fact, but the underlying reasons and the best methods of prevention are yet to be worked out.

Industrial centers are notoriously the places where tuberculosis thrives. Preventive measures are needed, based on the accurate knowledge of the influences favoring the disease, whether due to the occupation itself or to the habits of the people. Much has been accomplished in late years in the improvement of working conditions, based on general considerations of health, but special causes are suspected that operate directly or indirectly to produce tuberculosis. Hence the value of a systematic campaign like the one being made here. I hope the time will soon come when everywhere the same attention may be given to other communities, and universal principles, found to be related to the development of tuberculosis, shall be followed universally by the application of the same preventive measures. There is, possibly, no other problem of equal importance among infectious diseases, and which is really of national scope.

We may next turn to the subject of even greater importance than infection, namely, that of resistance or immunity to disease. It was once thought that some individuals were immune against infection by the tubercle bacilli, and others susceptible. We now know that anyone can be infected, but that many have a natural or acquired resistance to this disease. It appears also true that from childhood to maturity an increasing degree of resistance accompanies growth, except at the critical ages previously mentioned. The consequences of infection are, therefore, less serious in full-grown persons. They are endowed with stronger defenses than children, and these are quite sufficient in checking the spread of the bacilli.

Many theories have been held about the blood, especially the white corpuscles and their power to destroy the bacilli. It is true that in some diseases the bacteria are readily destroyed in the blood fluids when good resistance is established.

In tuberculosis the matter is more complicated because, while bacilli no doubt do die in the blood under the influence of antagonistic ferments, there are always some that survive and must be disposed of more slowly, if at all. The exact method by which we resist tuberculosis in the cells and tissues is still being studied. Theories held at one time are not tenable now, but each year brings us nearer to the understanding of these delicate processes in the cells of the body. A complete knowledge of these things is necessary before we can work out the best means of prevention by fortifying the body against disease.

It follows that if we knew how the healthy body disposes of the tubercle bacilli, we could expect to know what was lacking in those who do not resist. This means a knowledge of susceptibility,—what it means in terms of blood substances, cells, ferments or chemical substances.

When we observe flat or narrow-chested persons, we speak of them as predisposed to tuberculosis. This is a fact without much explanation except in vague terms, such as deficient expansion, poor circulation or displaced organs.

If we can counteract the functional defects, we are working on the best basis that we know at present. It is entirely conceivable that the real predisposition in such individuals rests on other causes, possibly remediable and not directly the result of flat chests or other deformities. Some of the alleged predispositions to tuberculosis are indeed the results of early infections by the disease itself, which interfere with normal growth, especially of the jaw, spine and thorax. We also know that some degree of immunity to pulmonary tuberculosis may follow tuberculosis in other parts of the body, particularly the lymph glands and bones.

This observation has been the cause of much discussion in late years. The first years of life witness a gradual development of resistance to tuberculosis, which seems in many cases to be due to a species of vaccination. Like one attack of scarlatina or measles, an immunity follows, of greater or less degree, which is sufficient to last through a long life. In the beginning, tuberculosis of slight amount probably acts in the same way. Subsequent infections are less and less likely to occur if the specific influence set in action by the first one is still working to prevent them. One naturally thinks that it would be desirable to have a universal infection for this reason. The difficulty is that there is no certainty that either the dose or the virulence of the bacilli can be known, and that the recipients might be in poor condition to receive the infection safely.

It is, therefore, safer to do away, if possible, with all danger of infection at any time.

Observations have been made to show that peoples that are but recently civilized, or that are still little in contact with civilization as we know it, are extraordinarily susceptible to acute forms of tuberculosis. This is true of the Indians of the Southwest, the Polynesians, and of many nomadic tribes of Asia.

One may actually fear that the "back to nature" cult may have other than social objections unless the world were made safe against the bacillus. We may be well assured that such an involution would take ages to produce. As our city life is now constituted, much undiscovered tuberculosis must prevail. Students of epidemiology give little attention to it because of the futility of attempts to control it by law. Only the really well-marked cases are discovered unless a very thorough examination is instituted, such as has been done in Framingham. The consequence is that tubercle bacilli are so commonly present that few people escape infection, and our efforts must be constant to build up a good resistance, while diminishing the dangers of infection by public and private hygienic measures.

One reason that no harm follows infection in so many people is that they escape other dangers that tend to awaken or spread an innocent tuberculosis. This fact must be carefully noted. Severe influenza, measles, whooping cough, acute bronchitis, and many other acute respiratory diseases have much to do with breaking down the normal resistance. Some act mechanically and scatter the bacilli by means of the rapid flow of blood through the lymph glands at a time when the body is weak from combat with another infection. Others doubtless exhaust some important functions of the body cells.

This will also occur in the exposure and fatigue incident to the war.

It has been believed by some that the vaccination against smallpox and typhoid, now generally applied to all the armies, reduces resistance to tuberculosis. While theoretically this may be true, and in isolated cases the coincidence of an outbreak of tuberculosis following vaccination has occurred, there are too many benefited by the protection against these diseases to oppose these measures. The chief objection to it, as now applied, is that it must be done on a large scale, and there is no time to pick those who may be showing symptoms of tuberculosis hitherto unsuspected.

To summarize in review, it may be said that resistance to tuberculosis is not immunity in the absolute sense. The resistance is natural or inherited in part, acquired gradually with growth and aided, to some extent, in many people, by slight infection. It may be broken down by other diseases, by all the hardships of life, by dissipation, by exposure and strain of war, as well as by underfeeding.

We know the main causes of breakdown in resistance, but not the minute changes in the body that make for protection and the reverse.

Finally, I should like to remark on the important subject of prevention of infection and the treatment of those afflicted with tuberculosis.

Sputum prophylaxis is the chief end of all measures taken to destroy the bacilli. This is ascertained beyond question. Were it possible to destroy all sputum as fast as it is expelled, a long step would be taken in prevention of tuberculosis. There is a widespread campaign of education, which has already lowered the death rate perceptibly. If all coughing without covering the mouth could be stopped, another drop in tuberculosis mortality might be expected. If handkerchiefs were abolished and the hands of patients kept clean, another considerable percentage might be cut off the death rate.

In short, if the personal habits of the open tuberculosis patients could be controlled, a very great lessening of tuberculosis should be expected. What would this involve? It would require each individual to expectorate properly and to do it in private, when possible; to use some form of cuspidor, preferably of paper; to cough as gently as possible, with paper or cloth held over the mouth during the act, especially when indoors, where children are present, and to use soap and water frequently on hands and mouth. We know enough about tuberculosis now, in this connection, to prevent it in great measure. The problem is how to get the patients to do these simple things.

In sputum prophylaxis perfection cannot be expected, but relative perfection has been and can be accomplished.

It may be impossible in a home where the mother is ill, but quite practicable where the father or one of the children is the invalid. The social customs of each race and family will often determine what is actually done, in spite of detailed instructions. Hence the slow evolution of the careful consumptive.

Each family is a problem by itself, and each individual presents some phase different from another. Isolation of the bad cougher is imperative where small children are present, for the spray from the sputum is often abundant, soiling hands, clothing, and contaminating food at the table. The mouth and lips are probably less often coated with bacilli than is generally believed, and healthy adults should not fear infection from those sources.

The practice of using a mouth wash after raising sputum is a useful adjunct, though of less consequence than hand-washing, in my opinion.

The protection of food from flies, and from human and bovine bacilli, is of sufficient importance to the infant of healthy parentage, to justify stringent laws. Hence, no care of milk can be too great, nor should it be handled by many persons.

When infection has once entered the home, it is a question what can be done for the children, to avert the disease. Here may be problems of great interest for the teacher and social worker, to fit these children for occupations which require little mental and physical strain. Tuberculosis can be bred out of a family by feeding abundantly, and vigorous physical training to overcome developmental defects while children are still young. Our forefathers in New England believed firmly in the hereditary transmission of the disease, and many are the instances of youth who overcame the inherited weak chest or poor muscular power under the guidance of the family physician. They were wise in their generation.

It has been declared impossible to prevent tuberculosis unless we can isolate all the people who have it,—like the unfortunate lepers of Hawaii.

If that be so, we shall doubtless continue to have the disease for many centuries to come. What is forgotten in such a statement is the gradual control of other diseases that powerfully aid if they do not actually give the start to tuberculosis; also the lessening of poverty and alcoholism, as well as much improvement in living conditions. All of these factors are actually diminishing the incidence and severity of tuberculosis, so that hygiene and sanitation may supplement these and reduce the disease in the face of a certain number of opportunities for infection.

It has been the dream of medical scientists that we should some day possess a specific preventive inoculation which would confer a lasting protection. Many experiments have shown that certain weak, virulent tubercle bacilli, when inoculated, soon die out or become healed and for the time being—possibly for a year or more—confer a heightened resistance against more dangerous infection.

This method of protective inoculation is entirely analogous to modern anti-typhoid vaccination. It is not so applicable, however; the bacilli are apt to cause unexpected harm, and reinoculation is necessary to maintain the immunity, since it gradually fades away. It has been tried with cattle, but the success was short-lived and it is now considered impracticable and has been abandoned.

Whether or not, instead of a protective inoculation we may discover a method of destroying the bacillus in the body, is a question now uppermost in the minds of the laboratory workers. This hope is now held reasonable because of the success in malaria with quinine and in syphilis with salvarsan. Some chemical compound may be found to compass our dream of the conquest of tuberculosis. Much work has already been done and will be continued hopefully.

Until that goal is reached, the treatment of tuberculosis in the individual patient should resemble the methods of Nature, nor should we interfere too much with Nature by administering depressing drugs.

Rest is the first requisite in active or progressive disease. It is well supported by experience and experiment.

Food in abundance and variety—we have no better medicine.

Fresh air and light, also in abundance.

Regulated exercise during convalescence or quiescence of the disease.

Medication for symptoms as they arise, and chiefly when complications cause severe pain or distress.

Lastly, a wise physician, gifted with common sense and understanding.

These are the great principles of treatment, and, doubtless, they will be required as adjuncts of the greatest specific that the world may yet find.

Original Articles.

THE CARREL-DAKIN METHOD OF TREATING SEPTIC WOUNDS; ITS APPLICATION TO CIVIL SURGERY.*

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AT the beginning of the present war, wounds were treated according to classical rules plus a certain amount of "faith in God." As a result, the number of deaths from sepsis far exceeded the fatalities on the battlefield. The fact that the recent wars had been fought on virgin soil, containing few, if any, pathogenic bacteria, while the present war, especially on the western front, is being waged over ground that has been under intensive cultivation for years and contains almost every conceivable variety of organisms, was at first given scant attention.

Later, as the bacteriology of the soil was studied and the mortality statistics from sepsis told their terrible story, a "stampede of discouragement" pervaded the ranks of military surgeons, and innumerable ideas for combating sepsis were advanced. Chief and worst among these were the mutilating operations, such as amputations, excisions of ends of bones and resection of joints,—a revival of Civil War surgery in the United States.

By the introduction of these methods sepsis was controlled to a certain extent, but there were many deaths from shock and a large number of those who survived were incapacitated for life. As a result, military surgeons began to look about for some effective germicide to control sepsis and avoid maiming operations. A host of new and old preparations of varying germicidal value were and are still being advocated. Some of these are claimed to be so highly germicidal that the dressing need not be changed for 7 to 14 days, thus giving the patient a rather offensive, though possibly not dangerous, pus poultice. A certain number of these antiseptics have been tested in the laboratory and found to be of value.

It may be of interest to mention briefly a few of these mixtures: H. Vincent[1] recommends dusting war wounds, after mechanical cleansing of the wound, with a powder of calcium hypochlorite and boric acid, 1 and 10 parts. He asserts that this powder has a powerful sterilizing action and seems to ward off gas gangrene. It does not harm living tissues, favors cicatrization, is a hemostatic and may be applied directly to the brain without harm.

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* Extracts from papers read before the Middleboro Medical Society, March 14, 1917; Fall River Medical Society, April 11, 1917; Brockton Medical Society, May 10, 1917; Hatherly Medical Society, May 29, 1917.

Delbet and Antoine[2] advocate irrigating wounds with a 12% solution of magnesium chloride, one of whom, Delbet, states that many wounds have been sterilized and closed by this method. These authors advise irrigating with a weak solution of acetic acid M vii to 1 liter of saline solution if the reaction of the discharge is alkaline, and soda bicarbonate in saline solution if the reaction of the discharge is acid.

Cheyrou[3] favors the Mencière method of forcibly spraying all crevices of a wound, after the surgical toilet has been performed, with a solution composed of iodoform, guiacol, eucalyptol, Peruvian balsam, alcohol and ether. This has an embalming effect on the tissues.

The Lemaitre method of painting the entire wound surface with tincture of iodine, after mechanical cleaning out, is well known and extensively used in civil practice.

Anderson and Chambers[4] advise the use of a paste composed of iodoform ʒii, bismuth subcarbonate ʒi, and liquid paraffine. This is to be applied after cleaning out the wound; the wound is then closed with interrupted sutures. These authors report most gratifying results with the use of the paste.

The hypertonic salt solution dressings of Sir Almroth Wright have been used extensively by British surgeons. This method has been described in numerous articles by the author. A very illuminating communication on saline dressings has been written by Kenneth Taylor[5] which leaves one somewhat in doubt as to the efficacy of this method.

During the early months of the war, when sepsis was taking its heaviest toll from the wounded, Carrel, in conjunction with Dakin, began his researches on the treatment of war wounds with hypochlorites in Tuffier's Clinic at Hospital Beaujon in Paris. And to him, more than to any man in the present war, is due the honor of having arrested the so-called "stampede of discouragement," its resulting mutilating operations and experimentation during this period of the war.

The Carrel-Dakin method has not been universally adopted in French hospitals, but where it has been used it has resulted in an enormous decrease in the number of septicemias, amputations, resections of bones and excision of joints. And since this method has given such gratifying results in the treatment of war wounds and offers a solution to some of the problems in treating sepsis in civil practice a repetition of the method of making Dakin's solution and the principles of the application of the Carrel method of treating septic wounds seems to the writer justifiable.

The Carrel method of treating wounds is based upon the fact that an infected wound, by mechanical and chemical means, can be sterilized or rendered free from bacteria and can then be closed by suture or adhesive tape as is done with a primary aseptic wound.

By mechanical means is understood the thorough and gentle removal of all infecting material, such as pieces of clothing, dirt, fragments of shell, etc.; of all dead tissue and free fragments of bone, and the opening up of all crevices of the wound where bacteria may have lodged.

By chemical means is understood the introduction into all crevices of the wound, by means of rubber tubes, of a solution which is non-toxic, does not injure healthy tissues but dissolves necrotic tissue and is strongly bactericidal.

As Desfosses[6] very aptly puts it: "Pasteur taught surgeons to wash their hands; Carrel has taught them to wash wounds."

For some time before the outbreak of the war Carrel had been studying the sterilization of experimental septic wounds in dogs at the Rockefeller Institute. As already stated, in the fall of 1914 Carrel and Dakin began the study of infected war wounds at Hospital Beaujon in Paris. After many experiments the solution which was finally accepted was prepared in the following manner:

140 gm. of dry carbonate of soda and 200 gm. of chloride of lime were placed in a bottle with 10 liters of water. This mixture was thoroughly shaken for one-half an hour and allowed to settle. Then the clear liquid was siphoned off and filtered through cotton, leaving in the bottle a precipitate of calcium carbonate. Then to the filtrate was added 40 gm. of boric acid and the solution was ready for use. This solution was unsatisfactory, owing to the variations in the amount of chlorine, due to the changes in the commercial chloride of lime. It was also irritating, which was thought to be due to the boric acid.

A change was then made and the "200-100-80" formula was used, which has been described in many articles in the literature and which, unfortunately, is still used by many druggists and hospital pharmacists. Like the first mixture, this solution contained a varying amount of chlorine, since a fixed amount of chloride of lime was used in each mixture. This was remedied by Daufresne[7] who titrated each sample of chloride of lime before making a solution, varying the amount of chloride of lime according to the amount of its chlorine content with a corresponding variation in the sodium carbonate and sodium bicarbonate. This was the method which Daufresne was using when I was at Carrel's hospital in Compiègne in January, 1917. He was experimenting at that time with the electrolysis method, which has since been used by one or two manufacturing houses in the United States.

The armamentarium necessary for making the Dakin-Daufresne solution is simple and can be procured at comparatively small expense. Figure 1 shows all of the necessary apparatus except a small bottle of phenolphthalein. A thorough knowledge of inorganic chemistry is not

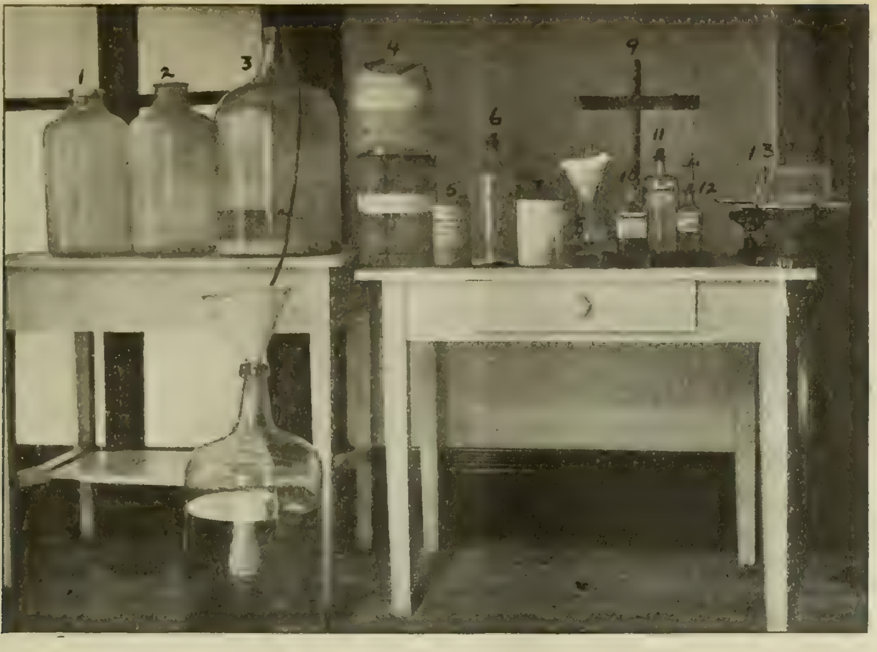

Fig. 1.—Armamentarium for making Dakin's solution: (1, 2) bottles for making small amount; (3) five-gallon bottles with siphon and filter set up; (4) sodium bicarbonate and chloride of lime; (5) sodium carbonate; (6) 20 g. chloride of lime in one liter water; (7) liter measure; (8) three small graduates for measuring c.c. and for titration; (9) burette; (10) 10% KI.; (11) n/10 hyposulphite of soda; (12) glacial acetic acid; (13) balance.

necessary in making the solution, as many have inferred from the literature.

Quantities to Employ in Preparing 10 Liters of Dakin's Solution at 0.45 to 0.5% ClONa.

Titration of Chloride of Lime	Chloride of Lime	Dry Carbonate of Soda	Bicarbonate of Soda
20	230 G	115 G	96 G
21	220	110	92
22	210	105	88
23	200	100	84
24	192	96	80
25	184	92	76
26	177	89	72
27	170	85	70
28	164	82	68
29	159	80	66
30	154	77	64
31	148	74	62
32	144	72	60
33	140	70	59·
34	135	68	57
35	132	66	55
36	128	64	53
37	124	62	52

Fig. 2.—Daufresne's Table.

The steps in the process of manufacture are: After mixing the chloride of lime thoroughly, weigh out 20 gm. and put in a bottle containing one liter of ordinary tap water. Allow to stand 6 to 12 hours, shaking 2 or 3 times; then filter a small part of the liter. Take 10 c. c. of the filtrate, add to this in a beaker 20 c. c. of a 10% solution of iodide of potassium and 2 c. c. of glacial acetic or concentrated hydrochloric acid. This will give a mahogany-colored mixture. Then fill a burette with N-10 hyposulphite of soda, such as radiologists use in fixing x-ray plates. This solution is made by mixing 25 gm. of hypo. with 1 liter of water Allow the N-10 hypo. in the burette to fall, drop by drop, into the mixture of chloride of lime, KI and acetic in the beaker until it is completely decolorized. Ordinarily, this should take from 12 to 14 c. c. of the hypo. The number of c. c. of hypo. used, mutiplied by 1.775, will give the per cent. of chlorine in 100 gm. of chloride of lime. Thus, if 13.5 c. c. of N-10 hypo. were used in decolorizing, the per cent. of chlorine in the sample of chloride of lime would be 23.96. By using the table (see Figure 2) given by Daufresne for making 10 liters of solution, it is found that for 24% we need to use chloride of lime 192 gm., dry carbonate of soda 96 gm. and bicarbonate of soda 80 gm. Had we used the "200-100-80" formula, we would have had a mixture containing more than the required amount (0.45% to 0.5%) of chlorine, which would have been irritating on application. Next, put the 192 gm. chloride of lime in a bottle with 5 liters tap water and the sodium carbonate and sodium bicarbonate in another bottle containing 5 liters of water. Shake these bottles from time to time, and allow to stand 6 to 12 hours. At the end of this time, pour the contents of one bottle into the other, shake and allow to stand about one-half an hour until the precipitate has settled to the bottom. Then siphon off the clear fluid, filtering it through a double filter paper into another bottle, and the Dakin's solution is ready for use. This solution should contain from 0.45% to 0.5% chlorine. To test this for chlorine, titrate as before, using 10 c. c. of the Dakin's solution. The number of c. c. of hypo. used should be multiplied by 0.03725 to give the per cent. of chlorine. Thus, if 13 c. c. of hypo. is used: $13.5 \times 0.03725 = 0.50\%$ of chlorine. To test the reaction of the solution, take a few c. c. in a beaker, drop into it a few grains of powdered phenolphthalein and shake. If the solution has been properly prepared there should be no coloration, while Javelle water and Labarraque's solution will give an intense red, indicating the presence of free caustic soda. The preparation of Dakin's solution, according to Daufresne's method, in the writer's opinion, is simple, does not require a special knowledge of chemistry and has been given here because of the persistent idea in the minds of many surgeons, who have not seen it prepared at Carrel's hospital, that its preparation is beyond the grasp of any but well-trained chemists or pharmacists.

In many of the smaller French hospitals where it is used, Dakin's solution is made by the surgeons or nurses, and in Tuffier's hospital at St. Germain where, next to Carrel's hospital, I saw the best results obtained with the Carrel-Dakin method of any hospital that I visited, the Dakin's solution was prepared by a French orderly.

As compared with Dichloramine-T, Dakin's more recent antiseptic, the manufacture of the Dakin-Daufresne solution is simplicity itself. Dichloramine-T may prove to be less expensive as a dressing for infected wounds than the Dakin-Daufresne solution, but under the present conditions in England and France it can never have the popularity that Dakin's solution has had, since during the time that I was in France, Chloramine-T, a substance very similar to Dichloramine-T, was almost unavailable and, second, it can be prepared only in a well-equipped laboratory under a very painstaking technic. Two of the requisites, especially at the present time, for an antiseptic to be extensively used are simplicity of manufacture and availability.[9] The cost of Dakin's solution is quite a factor when it is used as extensively as in French hospitals. Carrel,[10] in his recent book, gives the cost as .006 or 3-5 of a cent per liter. Buying the materials at retail prices, I have found the cost to be about 9-10 of a cent per liter.

The question of the proper method of preparing a wound for the instillation of Dakin's solution is one over which there is still some controversy between the radicals and conservatives. At first, there was such implicit faith in the power of the solution that very little was done to a wound aside from removing infecting material. The unsatisfactory results which followed caused a revival, to some extent, of the mutilating operations done following the wave of sepsis of the first few months of the war; such as excisions of the ends of bones for fractures near and communicating with joints, wide débridement of the path of the projectile and removing bone fragments, tendons and muscles. As examples of this method, I have seen a bullet wound through the shaft of the tibia, about 3 or 4 inches from the lower end of the bone, treated by a removal of half of the shaft of the bone from the wound down, including the articular surface of the lower end of the tibia. Also, excision of the head of the humerus for comminuted fracture of the upper portion of the shaft. Such operations are pretty likely to remove most of the infected tissues so that there is little trouble from sepsis, but they leave a badly crippled limb requiring extensive reconstruction work later on. Gradually, the pendulum has swung back to a more conservative, rational procedure. Fewer amputations for severe fractures of the long bones, without injury to the main blood vessels, are done, and the number of excisions of the ends of bones has grown less.

The preparation of a wound consists of, first, full anesthesia and rigid aseptic precautions; then the removal of the torn skin edges of the wound, either with scissors or scalpel, opening the skin and soft parts by a generous incision; removal of all foreign matter, such as clothing, dirt, grass and fragments of shell; opening up and exploring all crevices of the wound; removal of dead and soiled tissue and small unattached fragments of bone. Fragments of bone attached to periosteum are left *in situ*. This is followed by careful hemostasis of the entire wound, as Dakin's solution dissolves blood clots and may cause secondary hemorrhage. Carrel advises the use of chromic catgut for ligatures as it resists the action of Dakin's solution best. This, in brief, is the method employed by conservative surgeons. It does not give the brilliant results in avoiding sepsis and the early healing of the wounds that the wide débridements and excisions give, but it gives a better functioning limb and less reconstructive work after any sepsis is controlled.

Through-and-through drainage should always be avoided, where possible, as better results are obtained where the solution stagnates in contact with all parts of the wound and is renewed by fresh solution every two hours. The irrigation tubes in such a wound should be carried to the bottom of the wound so that the fresh solution is injected into the depth of the wound, thus forcing out all necrotic material, discharge and old solution.

In regard to the apparatus necessary for the instillation of the solution, I am not of the opinion that the exact apparatus, as prescribed by Carrel, is essential to success; that any infringement on his rules "spells failure." Glass tubes, 2 to 6 branches distributors, and storage tanks made by Fontaine or Gentile of Paris, or by some of the commercial houses in the United States, add much to the appearance of the dressing, but have no bearing on the result.

The absolute essential in doing a dressing, as in all apparatus used about the wound, is asepsis. Whether rubber tubes 4 mm. in diameter or 3 mm. are used; whether the syringe de Gentile or a syringe of the Triumph variety is used; so long as air-tight asepsis is preserved, the results will be the same. The old axiom that however septic a wound may be, new strains of bacteria may be added, is accepted literally by the men who really follow Carrel's technic. All dressings should be done with sterile instruments, hemostats or forceps; sterile gloves are worn, but never should come in contact with the wound or any of the dressing materials used.

After removal of the soiled dressing, the skin about the wound is cleaned with naphtha, then the skin near the wound and the wound itself are washed with sterile pledgelets of cotton wet with salt solution or neutral oleate of soda, followed by salt solution. If the wound is a cavity or sinus, it should be irrigated with Dakin's solution. After drying the skin about the wound, it is covered with sterile yellow vaseline spread on with a sterile throat stick or, as is more frequently done, the skin is covered about the wound with a two-inch bandage which has been cut into six-inch strips, saturated with yellow vaseline and sterilized. If the wound is on the upper side of a limb the skin on the under side of the limb should be protected with vaseline, as Dakin's solution is irritating to some patients' skins. If the skin is not thoroughly protected with vaseline, small pustules form, which are uncomfortable and delay healing.

The wound is now ready for placing the irrigating tubes. Formerly, in surface wounds a thin layer of gauze was placed over the wound to keep the wound saturated, and the tubes placed on this. It was found that a thin film of muco-pus formed on the side of the gauze next to the wound, which prevented the solution from coming in contact with the wound when injected. In surface and penetrating wounds or cavities drained from the upper surfaces of a limb, rubber tubes should be placed in *contact* with the wound. The tubes on surface wounds should be tied off at the distal end and be perforated with 1 mm. holes one-half inch apart, the length of the tube corresponding with the size of the wound, so that when solution is injected, it is sprayed over the wound. Enough tubes should be used to insure spraying the entire wound. In wounds with a cavity or sinus draining from the superior aspect of the limb, an open-end tube with no perforations in the walls should be used. If, as occasionally occurs in a sinus wound, the sinus attempts to close near the surface, leaving an infected cavity below, the sinus should be enlarged, two large tubes inserted to prevent closure and the Carrel tube placed between these. In surface wounds which are not horizontal as the patient lies in bed, care should be exercised in placing the tubes that they remain at the upper part of the wound, so that the solution runs down over the wound when injected. If this precaution is not taken, the upper part of the wound will not be flushed when the solution is injected, and the result vitiated.

In dressing perforating wounds, if extending from the superior to the inferior aspect of a limb, the orifice on the inferior aspect should be packed with gauze to prevent the solution running out at once, or the wound should be filled with gauze and a perforated tube inserted in the center of the gauze so that the gauze is kept soaked with solution.

Perforating wounds after the wound on the superior aspect has healed, or wounds penetrating the inferior aspect of a limb, are best treated by placing the patient in the ventral position. This point was well illustrated in one of my patients, a case of compound fracture of the shaft of the femur with a perforating wound, the wound on the inferior aspect of the leg healing rapidly when the patient was placed in the ventral position. See Figure 3.

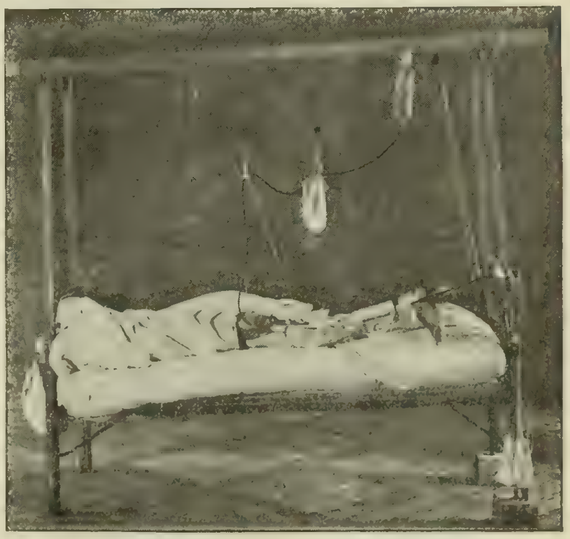

Fig. 3.—Compound fracture of left femoral shaft, perforating wound by *éclat d'obus;* wound on superior surface healed, wound on inferior surface treated by ventral position with extension in usual way. Rapid healing.

Perforating wounds are difficult to treat by the Carrel method as the gauze placed within the wound is saturated with Dakin's solution diluted with muco-pus from the wound, which is found, on taking smears from it, to contain many bacteria. This fact is made much of by Delbet[11] in his criticisms of the Carrel method. In such cases smears taken from the wound surfaces show a successively decreasing bacterial count, which Delbet does not take into consideration.

The Dakin's solution may be conveyed to the wound by means of a syringe, injecting each tube separately. This method is less effective than other methods, as there is danger of contaminating the outer end of the tube in the dressing. It is much more work than the second method. Also, in some hospitals I have seen the same syringe and bottle containing the solution carried from one patient to another. This is mentioned only to be condemned, as there is always danger of infecting the syringe when the solution is injected. Where the syringe method is used, there should be a separate syringe and bottle of Dakin's solution for each patient.

The second method consists in connecting the tubes entering the wound with distributors (see Figure 4), these to be connected by rubber tubing with a storage flask placed some 18 inches to 2 feet above the level of the wound. By opening a pinchcock on the tubing the solution is allowed to flow into the wound. This method of flushing the wound can be carried out by orderlies in the hospital.

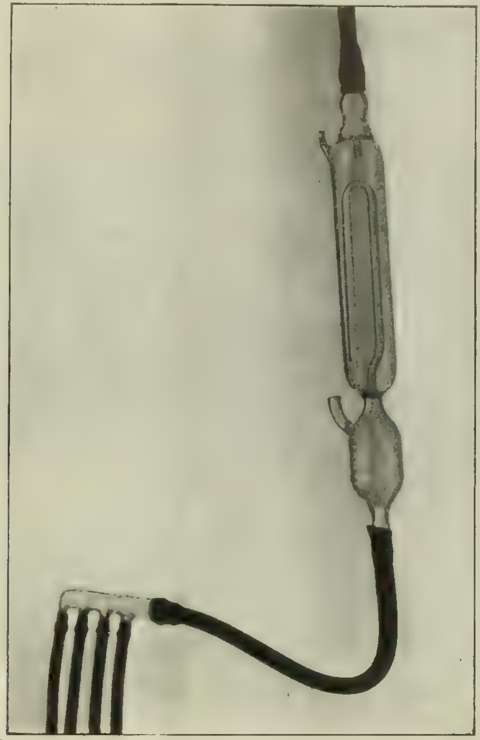

FIG. 4.—Tuffier automatic irrigator attached to tube from tank above and to tube leading to distributor to wound.

Tuffier[12] has devised a very ingenious automatic irrigator (see Figure 4) which flushes the wound every two hours. This device eliminates considerable work for nurses and orderlies of irrigating wounds by syringe or gravity. It is simply a small glass tube bent in the form of a U to act as a siphon, within a large tube which serves as a storage tank. This irrigator is connected with the large storage tank above and the tube going to the wound below. By means of a pinchcock the solution is allowed to drop into the irrigator from the tank above so that the irrigator is filled every two hours. When it is full the siphon in the irrigator empties it. These are made in different sizes, from one-half to two ounces.

The effectiveness of the treatment is confirmed by means of smears of the pus taken from the worst part of the wound. These smears are stained with methylene blue and the bacteria counted under a microscope. The progressive decrease in the number of bacteria per microscopic field is proof of the progress of sterilization of the wound. If the infection is a staphylococcus, the wound can be closed if the count shows 1 microbe to 10 microscopic fields on three successive counts. If the organism is a streptococcus or bacillus, the wound should not be closed until no microbes are found in the smear. These wounds are not bacteriologically sterile, as in many cases they will show bacteria culturally, but for practical purposes of closure they are sterile. It is unnecessary to wait until a wound is culturally sterile before attempting closure.

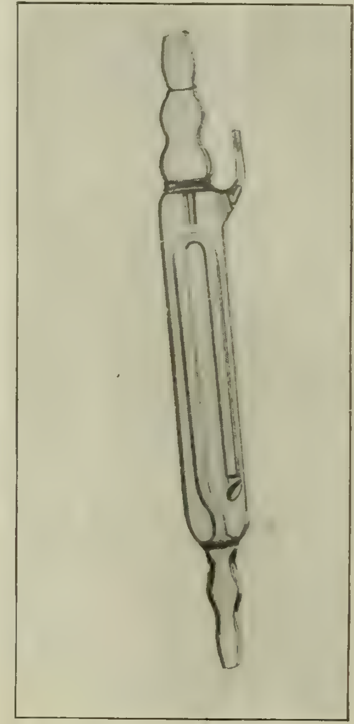

FIG. 5.—Tuffier small size irrigator.

The methods of closure of wounds are simple: First, non-operative, by drawing the wound edges together with adhesive bands. This method is slow and frequently results in considerable scar on healing. The second method, operative, consists in cutting around the border of the wound with a scalpel. The line of incision should be just in the border of the healthy skin. Then with scissors excising the thin margin of skin and new epithelium between the line of incision and granulations of the wound; after that, mobilizing the skin about the wound in the layer of subcutaneous fascia and approximating the skin edges with suture. The skin edges should be approximated over the granulations. Care should be taken in the operation to injure the granulations as little as possible. It has been found that removing granulations is frequently attended with poor results. This method gives a flexible linear scar without contraction.

The results of the Carrel-Dakin method of treatment may be conveniently grouped under two headings:

1. A saving of men.
2. A saving of money.

It has been found that with this method of treatment many limbs can be saved which formerly were amputated, thus eliminating many severe operations when a patient was in shock following a wound. Septicemias and abscesses following wounds have been greatly reduced. At Carrel's hospital, from December 1, 1915, to October 1, 1916, there were only three abscesses following wounds and three amputations necessitated by septicemia. Better results than these can be obtained, as shown by Uffolz,[13] where the Carrel-Dakin method is used at the front and can be instituted within six hours after the patient is wounded.

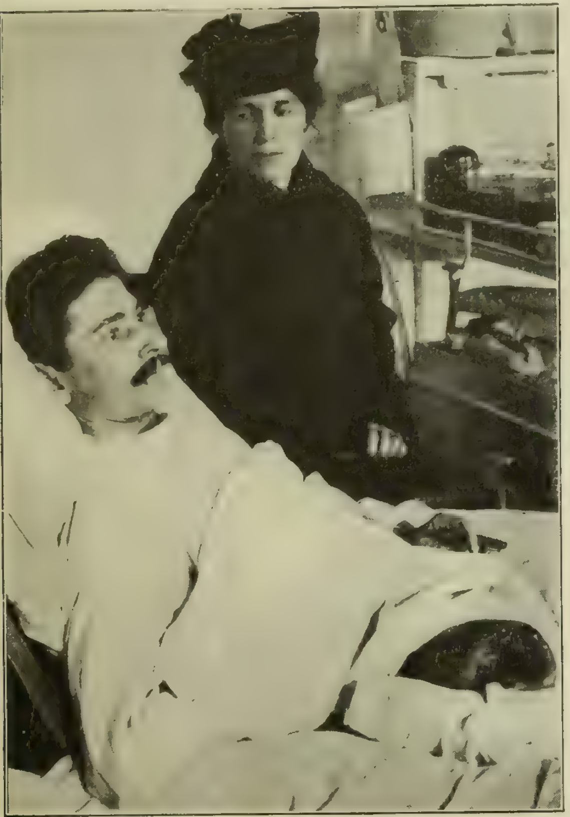

Fig. 6.—*Coup-de-hache* amputation following compound fracture of shaft of femur, secondary hemorrhage, ligation of femoral artery resulting in gangrene.

From an economic viewpoint the closure of wounds of soft parts and compound fractures, after infection has been subdued, and the resulting healing by primary union, is an enormous saving over older methods of treatment. Carrel, Depage[14] and others have reported closing wounds of soft parts in 5 to 20 days after instituting the treatment, which would have required many weeks to cicatrize. Compound fractures were, in many cases, closed in from 15 to 25 days, which would have required 6 to 8 months to heal by older methods of treatment—a saving of from 50 to 70% (Carrel) in the cost of treatment. A greater benefit still from this treatment is in the improved function of limbs as compared with other methods. This results in a greater probability of the patient's being able to earn a living after convalescence and, at the same time, a decrease in pensions.

A wound that requires six months to heal, in most cases, forms more scar tissue and is more liable to contracture than a similar wound which heals in four weeks. Also, a compound fracture which requires 6 to 8 months to unite and heal gives promise of less favorable ultimate results than one healing in six weeks.

Reviewing briefly the Carrel-Dakin method of treating wounds, we have, first, a solution that is simple and easy to make; which does not require a well-equipped laboratory or a special knowledge of chemistry; second, the ingredients of which it is made are always available. In regard to the method: in the hospitals and dressing stations where it has been used, it has proven that the inevitable sepsis following war wounds can be controlled; that many of the maiming operations which were done in the early months of the war to avoid sepsis were unnecessary; and that the mortality from sepsis can be greatly decreased as compared with older methods.

While the men who have studied this method of treating wounds at Compiègne have written little of the results of its use in civil practice, one would expect that the method would give as good results in killing domestic bugs as military bugs.

Tuffier was using Dakin's solution on all of his empyemas on his service last winter at Hospital Beaujon. His method was to fill the infected chest with Dakin's solution each morning and allow it to remain about one-half hour, then, turning the patient, allow the solution to run out. I have treated three empyemas recently by this method, with very gratifying results. There was a rapid decrease in the amount of discharge, an improvement in septic symptoms and an expansion of the lung at an earlier date than is usually seen. The latter symptom was very noticeable in Tuffier's cases, as he had x-rays taken at different periods showing the expansion of the lung.

In appendix abscess, my experience has proven that the Carrel-Dakin treatment should be used only on selected cases. In cases where the appendix has been removed and the abscess drained without much injury to the intestinal wall, the cigarette wicks can safely be removed about the fifth day and Carrel tubes inserted. The injection of Dakin's solution causes a sudden disappearance of fecal odor and rapid heal-

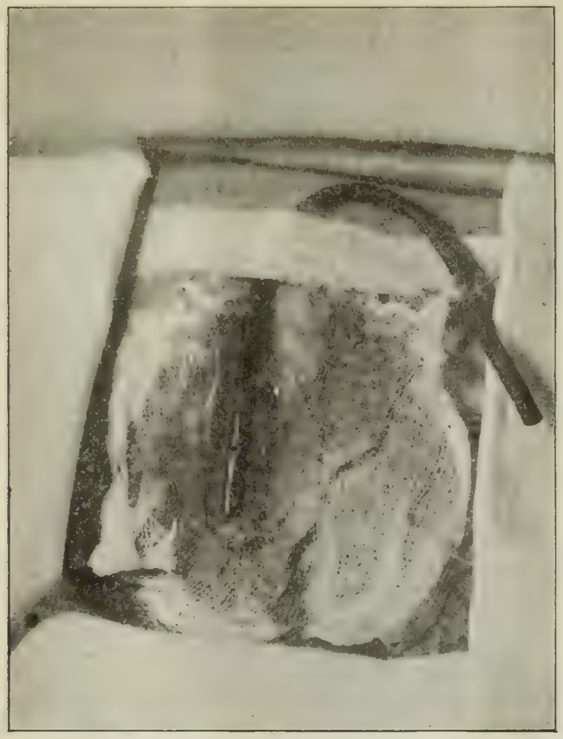

FIG. 7.—Drained appendectomy wound, unhealed after 12 weeks' treatment, healed in 2½ weeks under Carrel-Dakin treatment.

ing of the wound. But in cases where the appendix has been removed with difficulty, with separation of many adhesions and injury to visceral peritoneum, the injection of Dakin's solution by dissolving sloughing tissue may result in a fecal fistula or hemorrhage, as occurred in two of my cases.

The use of Dakin's solution in the treatment of puerperal sepsis has been described by Sherman.[15]

In sepsis of the extremities and localized sepsis, such as boils and carbuncles, it has been most effective, provided the infected area is laid open, allowing the solution to have free access to all parts.

In conclusion, it can be truly said that no other method of treating wounds in the present war has withstood the test of time and application under every existing condition and by many different surgeons that the Carrel-Dakin method has. Owing to the rather painstaking technic, it is not the ideal treatment; but where it is carried out according to the rules laid down by Carrel, the results have been uniformly better than by other methods thus far used. Its adoption in civil practice, in preference to the older methods of treating sepsis, will, in the writer's opinion, be attended with equally gratifying results.

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SURGERY OF THE BILIARY TRACT.

BY J. EMMONS BRIGGS, M.D., F.A.C.S., BOSTON.

THE primary object of a hospital is the care of the sick. Our large university hospitals have another equally important mission,—the instruction of the medical profession. The vast amount of clinical material should be utilized for the advancement of medical knowledge, both in clinical teaching and in contributions to literature.

My admiration for the Mayos is greatly augmented by the Mayo Clinics and their prolific contributions to medical literature. They have greatly enriched the archives of surgery through the vastness of their clinical experience. We cannot all present our conclusions with the authority of a Mayo; we who must draw our deductions in the surgery of the thyroid, stomach, gall-bladder, etc., from a total with a decimal point at least once removed.

This should not deter any surgeon from the responsibility of contributing his quota to the general fund of medical knowledge, for if it does "take nine tailors to make a man" even so, "the ninth of a man then you are."

For years, the medical journals have contained many articles on the surgery of the biliary tract. Nearly all such papers resolve themselves into a discussion of cholecystotomy *versus* cholecystectomy. The tendency to gravitate in this direction reminds one of the propensity of the clerical mind in early New England to discuss the efficacy of infant baptism. The last word has not been said, but the experienced surgeon finds abundant opportunity for the employment of both operations.

Several years ago, the tendency was strongly in favor of cholecystctomy as the safer and more rational procedure. Even the influence of the Mayo Clinic was thrown in this direction. More recently, the pendulum has swung toward cholecystectomy, in view of the larger percentage of radical cures.

It would seem that before discussing the relative merits of two operations, one conserving and the other extirpating the gall-bladder, we might with profit dwell for a moment upon the physiological importance of the gall-bladder.

Physiology teaches us that the gall-bladder serves as a reservoir for the storage of bile while it is not needed, and that during digestion the contractions of the gall-bladder express the bile into the duodenum. This theory is refuted on the ground that, were this the function of the gall-bladder, its capacity would be far greater. With 40 ounces as an average daily output of bile, a gall-bladder with a capacity of only one or two ounces must be a negligible factor as a storage container. Moreover, the muscular coats of the gall-bladder are not constructed so that contractions of these muscles are capable of emptying this viscus. That the gall-bladder may act as a tension bulb, thus protecting the parenchyma of the liver from the evil influences of back pressure, has more to commend it. Perhaps the distention of the common duct after a cholecystectomy, as described by Judd, and in one case observed by the writer, may be Nature's method of compensating for the loss of the gall-bladder.

But whatever arguments pertain in regard to the physiological importance of a healthy gall-bladder, come to naught in reference to the treatment of the diseased gall-bladder. When diseased, the normal muscle tone of the organ is altered; its walls are thickened and inelastic. Cicatricial tissue, the result of long-continued irritation and inflammation, immobilizes the organ and diminishes its capacity. Gallstones encroach upon its lumen, and inflammatory processes occasion extensive external adhesions.

We, therefore, have no argument with the physiologist, as to the desirability of conserving a functionating gall-bladder. We are concerned rather with a pathological problem, whether a diseased organ can safely be left in the abdominal cavity. Upon this premise, we shall have something to say. Logically, the degree of pathology which is encountered must regulate our conduct in determining whether to extirpate the gall-bladder, or to drain.

It is now generally understood that the following conditions demand the removal of the gall-bladder:

Obliteration of the cystic duct resulting in hydrops;

Suppuration within the gall-bladder, known as empyema;

Gangrene;

Carcinoma when limited to the gall-bladder wall;

Strawberry gall-bladder, where yellow spots are seen upon the mucous surface, the result of chronic ulceration.

Concerning these conditions, there is unanimity of opinion that cholecystectomy should be done.

To these, I would add that my experience urges a greater field of application for removal of the gall-bladder. When the walls are thickened, so that their contractile power is lost and regurgitant bile must stagnate in a functionally impaired organ, we have a condition favorable for the perpetuation of a chronic cholecystitis, with or without the formation of stones. In these cases, unfortunately, the gall-bladder may fail to contract and a long-continued and troublesome sinus persist.

A gall-bladder, the seat of a chronic inflammation, should not be left to jeopardize a patient's life and maintain a state of chronic invalidism from adhesion formation and subsequent contractions about the common duct, pylorus and duodenum.

How thoroughly I believe in the superiority of radical surgery of the gall-bladder, will be seen from the large proportion of cholecystectomies in my early experience. In the years 1914 and 1915, I fell from grace and performed more cholecystotomies, because of the admonitions of the surgical press.

I became distrustful of the superiority of cholecystotomy and soon found myself again within the fold, and fully convinced that radical cure was most frequently attained by extirpation of the gall-bladder. My personal experience has tended to a wide application of cholecystectomy, in view of the relatively small death rate.

But why talk about the relative mortality of these surgical procedures? A surgeon who drains the gall-bladder even under local anaesthesia in a patient *in extremis*, for gangrene and empyema, will have a higher mortality in cholecystotomy, for the large majority of these cases will commend themselves to him as suitable cases for drainage.

Should he elect to perform cholecystectomy in these desperate cases, then his mortality in cholecystectomy would exceed cholecystotomy. The patient's life is best conserved by two operations: first, drainage; and later, radical removal, if indicated.

If there be definite indications for cholecystectomy, there should be equally definite contraindications.

Cholecystotomy is indicated:

In patients, desperately ill, where a prolonged operation cannot be tolerated;

In obese patients, where the gall-bladder is contracted, densely surrounded by adhesions and deeply imbedded beneath, and remote from the free edge of the liver. In other words, where it cannot be removed with relative safety, it should be incised, stones removed, and drained; for it is better to have a living patient than to perform an ideal operation.

In all cases of pancreatitis with jaundice, the gall-bladder should be conserved. It affords an excellent drainage tract for the bile passages, or may be utilized in shunting bile into the intestinal tract, or in the performance of cholecystenterostomy.

There remains a large number of cases of cholecystitis, where simple drainage of the gall-bladder may be curative; or cholelithiasis, where removal of gallstones and drainage may result in radical cure, provided the gall-bladder is not markedly pathological.

It is in these cases that the surgeon must decide whether to drain or excise. This decision may at times "make cowards of us all," for it is easier to drain than to excise.

The operation of cholecystectomy in certain cases may be technically difficult, but a complete restoration to health is the object sought. This, however, should be obtained without too great hazard. I am convinced that the relative mortality in these two operations is not essentially different in the hands of a skilful surgeon.

I am equally certain that in the hands of the novice the operation of cholecystectomy is attended by a far greater mortality; for the surgeon is working in a danger zone, unfamiliar with the anatomy. The pricking of the common duct, the throwing of a ligature about it, an injury to the portal vein, an insecure ligation of the cystic duct or the cystic artery, may result in disaster and death. These accidents are quite preventable and unlikely to occur in the hands of the expert.

The crux of the problem lies in the selection of the case where cholecystectomy can be safely performed, and the surgeon of limited experience may attempt to remove the gall-bladder when a man of wider experience could tell at a glance that a cholecystotomy was all that should be undertaken.

Probably every surgeon of wide experience has met with calamity in the performance of cholecystectomy, the most common mishap being the slipping or blowing off of a ligature about the cystic duct.

Among my early cases, I performed cholecystectomy upon an aged woman. As far as I know, the cystic duct was securely ligated. She was convalescing in a satisfactory manner and had begun to sit up, when very suddenly at night, she was taken with severe abdominal pain, acute distention of the abdomen and vomiting.

I was hurriedly summoned; a condition of acute peritonitis was suspected and her abdomen was immediately opened through the old incision. A large quantity of flocculent bile poured out through this wound. Without further manipulation, some drains were arranged through the abdominal wound and my patient made an uninterrupted recovery. Had there been any delay in instituting drainage, she would have succumbed to general peritonitis.

The relative merits of cholecystotomy *vs.* cholecystectomy must be decided upon the immediate mortality and the morbidity statistics following these procedures.

In a total containing twice as many cholecystectomies as cholecystotomies, the writer's mortality in cholecystectomy has been 3.6%, and in cholecystotomy, 20.4%. This points conclusively to the fact that the patients most critically ill have been treated by simple drainage. Many cases were *in extremis* and died shortly after operation.

In the morbidity following the two operations, my experience points strongly to the advantages of cholecystectomy. I reckon among my unpleasant experiences one case of re-formation of gallstones; two cases of stones overlooked; one case of persistent fistula, where the patient would not consent to a second operation; several cases of fistula requiring cholecystectomy, and numerous cases of persistent soreness in gall-bladder region, suggesting chronic cholecystitis and requiring the removal of the gall-bladder.

My experience with cholecystotomy seems to confirm the observations recorded by Deaver[1], where he says that about 4.07% of his cases of biliary affections were secondary cases, where one or more previous operations had been made upon the bile passages. The most frequent recurrences after cholecystotomy were stones in the gall-bladder and common duct, with adhesions and stricture.

In a study of a series of cases by C. H. Mayo[2], he found that 53% of cholecystotomy cases were cured and 71% of cholecystectomy. Mayo claims that cholecystectomy is indicated in 80% of gallstone diseases.

Lane says that cholecystectomy is the operation of choice in cholelithiasis. (*Jour. of A. M. A.*, Nov. 20, 1915, 9, 1794.)

Swope reports that 96.8% of cures follow cholecystectomy and 74.8% follow cholecystotomy. (*Am. Jour. Obstetrics*, Nov., 1915.)

My cholecystectomy cases are conspicuous for lack of complications; almost universal and complete relief has followed this operation. One case of flooding of the peritoneal cavity with bile, previously mentioned, and one case of cancer of the pancreas, eight years after cholecystectomy, are the only instances where I have been compelled to re-enter the abdomen.

The argument against cholecystectomy, on the ground that the gall-bladder, if left, may be a convenient guide to the common duct in case of secondary operation, fails to interest me, because the removal of the gall-bladder removes the atrium of infection, rendering subsequent operation exceedingly improbable.

Should it be necessary to explore the common duct, it would not seem that a previous cholecystectomy should present insurmountable obstacles.

Pancreatitis is frequently observed as a sequel of gall-bladder disease. Deaver and Pfeiffer[3] have pointed to the manner in which this infection is carried from the inflamed gall-bladder to the peri-pancreatic tissue by way of lymphatic circulation, resulting in pancreatitis. In describing the method of infection, Deaver calls attention to the communication between the pancreas and the lymphatics of the stomach, duodenum, spleen, liver, gall-bladder, ducts, colon and left suprarenal.

The lymphatics arising from these sources are closely related to those of the surface of the head of the pancreas, and inosculate directly with the efferent lymph channels from that organ. He claims that the inflammation of the head of the pancreas, so frequently observed in cholecystitis, corresponds to the lymphatic distribution and not at all to the duct distribution, as would be the case if resulting from ascending duct infection.

This explanation of the method of transmission of infection makes plain the reason for the enlargement and induration so frequently observed in the head of the pancreas. On the theory of an ascending duct infection, it would be difficult to explain why the head of the pancreas should show a greater degree of involvement than the body of this organ.

When the head of the pancreas is involved, Deaver logically recommends cholecystectomy, for in that way he removes the source of the infection. In case the pancreas is chiefly affected, he advises against the removal of the gall-bladder; but drains and preserves it for a cholecystoduodenostomy, in case the common duct should become permanently obstructed.

I have no new technic in the operation of cholecystectomy. I believe in an incision sufficiently long to expose readily the under surface of the liver in the region of the gall-bladder. I recognize that the typical American operation of cholecystectomy is performed by dissecting the gall-bladder from below upward, first severing the cystic duct and ligating the cystic artery. The gall-bladder can then be readily stripped from its sulcus in the liver without bleeding.

Personally, I prefer to perform this operation in reverse order, first cutting around the gall-bladder at a point about one-half inch away from the liver. By dry dissection, the fundus of the gall-bladder is separated from the liver, from above downward, until the cystic duct is reached.

When bleeding from the cystic artery is encountered, a hemostatic forceps is applied. A cuff of peritoneum is fashioned about the cystic duct, which is clamped with artery forceps both above and below the point where it is severed. I then grasp the distal end of the cystic duct and pass a probe downward into the duodenum. I do not probe upward into the hepatic duct unless indicated.

If the ducts are free, two chromic ligatures are thrown about the cystic duct, the lower tied rather loosely and the upper with considerable force. A drop of carbolic acid is then applied to the stump; the stump is buried beneath the peritoneal flap which was previously fashioned.

The denuded area occasioned by removal of the gall-bladder is then closed by bringing together, with catgut sutures, the peritoneal flaps which were fashioned as the first step in cholecystectomy.

I am aware that this technic is not the accepted procedure of the day; nevertheless, I am convinced that it is a safer method of removing the gall-bladder than the initial severing of the duct.

I have never experienced any of the calamities which are described as a complication of cholecystectomy; have never injured the common duct; nor is there any likelihood of doing this when the operation is made from above downward. A recent article by Major G. Seelig of St. Louis, on cholecystectomy calls attention to the desirability of this method.

I am appending statistics of the surgery of the biliary tract at the Massachusetts Homeopathic Hospital during a period of 11 years. It should be remembered that this is a large general hospital in the center of Boston, and the great proportion of its patients come from this city and its suburbs. Many patients in desperate condition, suffering from acute gall-bladder diseases, naturally come into our clinics.

A large percentage of our cases should be classified as acute, and includes acute cholecystitis, hydrops, gangrene associated with pancreatic disturbance and with stones in the common duct. These statistics include several cases of patients *in extremis,* where the propriety of any operation was questionable.

In the years 1912, 1913 and 1914, 139 cholecystotomies and 57 cholecystectomies were performed. In the three years following, the figures are reversed and we had 76 cholecystotomies and 95 cholecystectomies. This reversal is probably due to the trend of literature in favor of cholecystectomy, corroborated by the personal experience of our surgeons.

In 1914, the hospital established a follow-up system. The replies from patients received since that date show nine unsatisfactory results from cholecystotomy and two from cholecystectomy.

From our statistics, it will appear that the mortality in cholecystectomy is lower than in cholecystotomy by 2.3%. We are not justified, however, in concluding that one operation is safer than the other, as cholecystotomy was employed in the more severe cases.

The end-results, both in our hospital statistics and in my own private work, corroborate the statement previously made in this paper, that the operation of cholecystectomy has given more satisfactory permanent cures.

Cholecystotomy		
Total	333	
Deaths	38	
Total death rate		11.4%
Cancer deaths	5	
Death rate (excl. cancer)		10%
Cholecystectomy		
Total	263	
Deaths	24	
Total death rate		9.1%
Cancer deaths	4	
Death rate (excl. cancer)		7.7%
Choledochotomy		
Total	32	
Deaths	6	
Total death rate		18.7%
Cancer death	1	
Death rate (excl. cancer)		16%
Cholecyst-enterostomy		
Total	9	
Deaths (all from cancer)	3	
Death rate		33 1-3%
Total cases gall-bladder surgery	637	
Total deaths	71	
Total death rate		11.1%

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LIPOIDS IN 131 DIABETIC BLOODS.

BY HORACE GRAY, BOSTON.

[From the Department of Biological Chemistry, Harvard Medical School.]

(*Continued from page 94.*)

WEIGHT.

Low or High Weight.

In order to study the relation of weight to the lipoids it should be noted that:

1. The patient's weight taken for consideration has been not the Maximum Weight (so-called "best weight"), nor the Onset Weight (which incidentally *often* coincides with the maximal weight, and very likely should always coincide if patients only noted carefully enough their earliest symptoms), but the Weight Today (*i.e.,* when the blood specimen was drawn).

2. This weight has not been considered in its *absolute* level, but only in its level *relative to the normal,** *i.e.,* whether under or over weight.

This relation has been calculated by the formula:

$$\frac{\text{Patient's weight minus normal weight}}{\text{Normal weight}}$$

% over (+) or under (—) weight

3. Now the *standard normal* table should show the average weight not merely for each sex or age or height, but rather for each sex and year of age subdivided according to height. The most recent of such tables that I have been able to find have been reprinted recently in this JOURNAL (December 27, 1917) because they are so useful and because published in reports which, though in print, are apt to be found only in special and often inaccessible libraries. Both were published in feet and inches and pounds, hence the use of these in this paper rather than

TABLE XIX.

RELATION OF WEIGHT WHEN BLOOD WAS TAKEN.

BLOOD LIPOIDS IN PER CENT.

PER CENT. OVERWEIGHT + UNDERWEIGHT —	NO. OF BLOODS	TOTAL-FAT		TOTAL FATTY ACIDS			LECITHIN			CHOLESTEROL			GLYCERIDES		T. F. A. C.			L. C.			TOTAL LIPOIDS
		W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
+21 and over (max. +63)	4	0.81	0.88	0.59	0.67	0.34	0.31	0.22	0.43	0.22	0.22	0.20	0.36	0.08	0.63	2.88	0.88	1.42	0.97	2.17	0.91
+11 to 20	5	0.49	0.90	0.58	0.67	0.48	0.30	0.22	0.37	0.21	0.23	0.16	0.45	0.22	2.05	3.10	1.27	1.37	0.94	2.11	0.99
+1 to 10	6	0.87	1.01	0.63	0.73	0.49	0.32	0.26	0.42	0.24	0.28	0.19	0.45	0.21	1.96	2.89	1.15	1.40	0.95	2.30	1.01
±0, *i.e.* normal	2	0.62	0.70	0.42	0.50	0.28	0.28	0.21	0.42	0.20	0.21	0.20	0.29	0.01	1.49	2.44	0.79	2.43	1.03	2.13	0.79
—1 to —10	15	0.74	0.88	0.55	0.63	0.44	0.30	0.24	0.37	0.23	0.25	0.20	0.36	0.21	1.86	2.51	1.30	1.35	1.03	2.00	0.97
—11 to —20	19	0.97	1.11	0.73	0.79	0.47	0.34	0.28	0.43	0.27	0.31	0.21	0.50	0.22	1.92	2.90	1.10	1.31	1.01	2.08	1.21
—21 to —30	29	1.15	1.44	0.86	0.99	0.49	0.39	0.39	0.42	0.38	0.46	0.25	0.55	0.23	1.89	2.16	1.22	1.11	0.88	1.81	1.48
—31 to —40	19	1.62	2.13	1.15	1.50	0.76	0.43	0.42	0.43	0.46	0.58	0.27	1.12	0.51	2.73	3.62	1.83	1.00	0.74	1.94	2.40
—41 and under (min. —59)	10	1.58	1.88	1.53	1.38	0.71	0.30	0.38	0.42	0.41	0.52	0.21	0.95	0.49	2.38	3.15	1.65	1.05	0.78	2.13	2.05
+11 and over	9	0.80	0.89	0.59	0.67	0.44	0.31	0.22	0.40	0.21	0.23	0.17	0.41	0.17	1.89	2.93	1.12	1.39	0.95	2.13	0.96
+10 to —10, *i.e.* broad normal	23	0.77	0.90	0.56	0.64	0.44	0.31	0.24	0.39	0.23	0.26	0.19	0.39	0.20	1.86	2.60	1.20	1.37	1.00	2.10	0.99
—11 and under	77	1.26	1.59	0.92	1.12	0.57	0.39	0.37	0.42	0.37	0.41	0.24	0.73	0.32	2.22	3.00	1.37	1.13	0.86	1.96	1.72

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* Means, J. H.: The Basal Metabolism in Obesity, Arch. Int. Med., May, 1916, xvii, 706, 704-710.

the preferable metric units. It will be noticed that the insurance table, "age 15 and over," is unfortunately *with* clothes and shoes. The formula recommended in the recent article on normal weight could not be used for the present article, owing to ignorance of the chest circumference of each patient.

After the per cent.± over or under weight had been calculated, the bloods were grouped by these per cents. and each group was averaged, with the results given in Table XIX.

In Table XIX the total-lipoids for those *either* under or over weight appear greater than for those whose weight is what it should be. But this peculiar result may well be due to the small size of the latter group, *i.e.,* only two specimens. If we make a further average in total-lipoids of those within 10%±, which is if anything an unnecessarily restricted normal, we get 0.99 g. per 100 cc., while all those more than 10% overweight average 0.96, and those more than 10% underweight average 1.72. Furthermore, *underweight* is accompanied by marked rise, not only of total-lipoids, but of all lipoids individually: total-fatty-acid, lecithin and cholesterol. *Overweights* have lipoid averages of little interest, *i.e.,* slightly above those for normal weights in total-fatty-acids and in glycerides in plasma, but slightly *below* normal in glycerides in corpuscles, in lecithin, and in cholesterol. This increase is apparently proportional in total-fat and cholesterol, less noticeably so in lecithin.

LOSS OF WEIGHT.

Is great loss of weight accompanied by low lipoids? To determine this loss, the Maximal Weight and the Weight Today (i.e., the time of the last specimen obtained) have each been expressed as the %± normal, already explained; and the number of points difference between these two percentages has been taken as the criterion. That the *greatest loss* of weight was here accompanied by the *lower total-fat* is apparent only if the list is averaged in upper and lower halves separately, when we see that the lower half, *i.e.,* the 24 greatest losers, had the lower total-fat—0.84. Cholesterol was precisely the same in both halves.

Table XX.

Loss of Weight.

Loss of Weight, Expressed as Difference Between Max. Wt. and Weight When Blood Was Taken; Weight in Each Case Having Been Expressed as Per Cent. Above or Below Normal Standard.	No. of Bloods	Blood Lipoids in Per Cent. Total-Fat W. B.	Cholesterol W. B.
0—20	20	0.90	0.28
21—30	13	0.93	0.26
31—40	13	0.95	0.32
41—50	10	0.80	0.25
51—60	7	0.99	0.24
61 and over	7	0.73	0.36
0—40	46	0.92	0.28
41 and over	24	0.84	0.28

DIETARY FAT.

When ingested fat was more than 40 grams, total-fat was extraordinarily steady at about 1.25%, as compared with about 0.8% when diet fat was 1-40 g. The curious point is that when no fat at all was eaten the total fat averaged high again—also 1.25%.

L. and C. both show the same points as T.F.

Table XXI.

Influence of Dietary Fat in Preceding 24 Hours.

Dietary Fat in G.	No. of Bloods	Total-Fat		Total Fatty Acids			Lecithin			Blood Lipoids in Per Cent. Cholesterol			Glycerides		T. F. A. L.			L. C.			Total Lipoids
		W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
0	24	1.25	1.48	0.92	1.09	0.94	0.34	0.32	0.37	0.33	0.39	0.22	0.74	0.48	2.51	3.22	2.01	1.20	0.94	1.87	1.63
1— 20	9	0.87	0.93	0.65	0.69	0.51	0.29	0.24	0.39	0.22	0.24	0.18	0.42	0.29	2.03	2.95	1.32	1.40	0.98	2.12	1.00
21— 40	4	0.70	1.48	0.50	1.08	0.53	0.30	0.28	0.49	0.20	0.41	0.20	0.75	0.19	1.66	3.50	1.07	1.50	0.79	2.47	1.60
41— 60	6	1.27	1.89	0.89	1.24	0.41	0.39	0.38	0.37	0.38	0.48	0.23	0.83	0.16	2.28	3.11	1.19	1.04	0.89	1.80	1.88
61— 80	11	1.23	1.65	0.84	1.16	0.57	0.39	0.38	0.39	0.39	0.49	0.23	0.73	0.32	2.11	3.09	1.06	1.05	0.80	1.85	1.77
81—150	15	1.23	1.36	0.88	0.95	0.51	0.39	0.33	0.47	0.35	0.41	0.24	0.58	0.21	1.89	2.22	1.04	1.16	0.87	2.10	1.49

Table XXII.

Influence of Fasting.

No. of Days Fasting	No. of Bloods	Total-Fat		Total Fatty Acids			Lecithin			Blood Lipoids in Per Cent. Cholesterol			Glycerides		T. F. A. L.			L. C.			Total Lipoids
		W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
1	4	1.14	1.36	0.71	0.94	0.37	0.43	0.40	0.47	0.43	0.42	0.29	0.57	0.03	1.58	2.58	0.75	1.05	0.79	1.71	1.69
2	2	2.54	2.82	2.02	2.15	1.81	0.39	0.43	0.34	0.52	0.67	0.28	1.67	1.66	4.38	4.08	5.58	1.14	1.00	1.44	3.03
3	1	1.08	1.22	0.83	0.95	0.67	0.35	0.26	0.47	0.25	0.27	0.21	0.69	0.36	2.37	3.65	1.43	1.40	0.96	2.24	1.33

Total-lipoids also, except that its low level corresponds not to 1-40 grams dietary fat, but to the smaller group, 1-20 grams.

FASTING.

Unfortunately no two of these seven specimens came from the same patient on successive days. From Table XXII, the lipoids appear increased after the second day of fasting, while after the third they become lower than after the first day. More data are imperative to furnish conclusions.

ACIDOSIS.

Acidosis goes with increased lipoids, but the striking feature of Table XXIII is that compared with diabetics without acidosis, the lipoid increase is twice as great with moderate acidosis as with severe. The greatest percentile increase is in glycerides in the corpuscles, 145%; then glycerides in plasma; after that total-fatty-acid in corpuscles, then in plasma. Cholesterol is pushed up much less, and lecithin still less.

CARBOHYDRATE BALANCE.

When the carbohydrate balance is 0 or negative, one would expect to find the lipoids increased. This is in fact true, as seen in Table XXIV.

It is most clearly shown by the column for *total-fat* in W.B., where:

1. The values corresponding to a balance of 0 or less are higher than the values corresponding to any positive balance.

2. When the balance is negative, a striking feature is that the lipoid value is lower, not higher, than when the balance is 0. Furthermore, it is enough lower to be closer to the value for a plus-balance than to the value for 0-balance.

3. As the plus-balance increases, the corresponding lipoid values decrease, and progressively so, except for the 1.04 corresponding to 1 to 20 g. balance.

T.F. in plasma is irregular in many respects.

T.F.A. in W.B. parallels *total-fat* in W.B., here as usual; in plasma and in corpuscles it is inconclusive.

Lecithin. 1 and 2. The lipoid value corresponding to 0-balance is higher than for +-balance. The value for a minus-balance is not merely less than 0-balance, but is the same as +-balance.

3. Until the balance has increased to +81 or more, there is no lipoid decrease.

Cholesterol behaves like lecithin.

Glycerides in W.B. act like T.F. in W.B., but instead of only one exception, under point 3, show two irregularities.

Total-lipoids may have the same said of them.

The other columns are not significant.

TABLE XXIII.

INFLUENCE OF ACIDOSIS.

		Blood Lipoids in Per Cent.																				
Acidosis	No. of Bloods	Total-Fat		Total Fatty Acids			Lecithin			Cholesterol			Glycerides		T. F. A. L.			L. C.			Total Lipoids
		W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
0	81	1.02	1.24	0.72	0.87	0.48	0.35	0.31	0.41	0.31	0.37	0.22	0.52	0.22	1.95	2.74	1.14	1.22	0.91	0.96	1.36
Moderate	20	1.45	1.75	1.07	1.30	0.78	0.37	0.35	0.38	0.39	0.45	0.25	0.92	0.54	2.67	3.41	2.18	1.11	0.86	1.67	1.95
Severe	16	1.17	1.47	0.86	1.07	0.48	0.37	0.34	0.41	0.35	0.37	0.20	0.68	0.24	2.18	2.67	1.23	1.28	0.95	2.28	1.59
% { above (+) / below (—) } av. of 81 diabetic bloods without acidosis, shown by:	Moderate acidosis	42	41	49	49	63	6	13	$\overline{7}$	26	22	14	83	145	37	24	91	$\overline{9}$	$\overline{6}$	74	43
	Severe acidosis	15	19	19	23	0	6	10	0	13	0	$\overline{9}$	31	9	12	$\overline{3}$	8	5	4	138	17

TABLE XXIV.

INFLUENCE OF CARBOHYDRATE BALANCE OF PRECEDING 24 HOURS.

CH Bal. in G.	No. of Bloods	Blood Lipoids in Per Cent.																		
		Total-Fat		Total Fatty Acids			Lecithin			Cholesterol			Glycerides		T. F. A. / L.			L. / C.			Total Lipoids
		W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
—83 to —1	6	1.22	1.52	0.93	1.17	0.63	0.35	0.33	0.38	0.29	0.35	0.18	0.85	0.39	2.50	2.63	1.75	1.29	0.99	2.31	1.66
0	8	1.57	1.77	1.15	1.29	0.89	0.41	0.40	0.41	0.42	0.48	0.25	0.92	0.76	2.59	3.13	2.48	1.13	0.89	1.81	2.09
+1 to 20	13	1.04	1.57	0.73	0.91	0.32	0.35	0.31	0.40	0.31	0.37	0.25	0.50	0.08	1.60	2.79	0.80	1.16	0.86	1.80	1.36
21 to 40	11	1.20	1.04	0.88	0.96	0.67	0.35	0.33	0.37	0.32	0.38	0.22	0.61	0.43	2.43	2.94	1.82	1.26	0.97	1.88	1.46
41 to 60	15	1.17	1.57	0.82	1.12	0.55	0.35	0.32	0.40	0.32	0.45	0.23	0.75	0.22	2.26	3.30	1.35	1.09	0.83	1.81	1.70
61 to 80	11	1.11	1.47	0.78	1.07	0.49	0.36	0.32	0.43	0.33	0.40	0.19	0.73	0.25	2.11	3.28	1.23	1.12	0.87	2.26	1.61
81 to 283	5	0.76	0.85	0.47	0.54	0.37	0.32	0.25	0.40	0.29	0.31	0.22	0.24	0.08	1.49	2.23	0.92	1.14	0.86	182	0.92

(*To be concluded.*)

Clinical Department.

PARALYSIS AGITANS AND MYOPATHIC DYSTROPHY OCCURRING IN UNCLE AND NEPHEW, WITH EVIDENCES OF INTERNAL GLANDULAR DYSCRASIA IN THE LATTER.

BY MICHAEL OSNATO, M.D., NEW YORK,

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WITHOUT attempting to draw any conclusions from the two cases about to be reported, it is, nevertheless, necessary to point out the fact that there has been considerable discussion recently as to whether paralysis agitans, on the one hand, and certain types of muscular atrophy on the other, are not caused by disturbances in the function or development of the glands of internal secretion. Nothing has been proven definitely to support this contention, nevertheless the work of Timme with certain cases of muscular atrophy and the parathyroid hypothesis, supported by Roussy and Clunet, are sufficiently suggestive to make a report of two cases of this kind justifiable. The recent work of Farhon and Farhon, quoted by Falta (p. 463), is confirmative apparently of their findings as regards the parathyroid in paralysis agitans.

Timme (Proceedings of the N. Y. Neurological Society, *published in the Journal of Nervous and Mental Diseases,* March, 1917) has seemed to place the pineal gland in suspicion as the causative factor in muscular atrophy, particularly of the infantile, familial type. The case here reported seems to show the pineal shadow such as described by this author, and it also shows an unusually large and deep sella turcica, and there is some evidence of pineal dysfunction in the history of the case.

Both these patients have been under observation for a number of years on the Chronic Male Service of Doctors Brush and Browning at the Kings County Hospital.

The relationship between these patients is that of uncle and nephew, the older man being the brother of the younger man's mother. The older patient suffers from a typical paralysis agitans, the younger patient suffers from muscular atrophy of the Leyden-Moebius or infantile type.

The two cases are as follows:

CASE 1. A. D., age 80, widower; was perfectly well until the age of 72. At this time he noticed a tremor, which began in the right thumb and wrist, and gradually spread to the fingers and arm and forearm, and finally to the same place on the other side. At about this time, also, he became weak and stiff and did not walk as well as previously, and noticed that his memory was failing. He finally had to quit work because of these complaints. He was admitted to the Kings County Hospital in June, 1913, remained for six weeks, and then was readmitted in April, 1916. On his last admission, it was found that he could not walk at all without assistance and that his tremor had become practically generalized, involving his head, both lower and upper extremities and face, and also his tongue. He was very much demented, disoriented as to time and place and for dates, and his speech was rambling and incoherent.

The *previous history* is that he always was a heavy and steady drinker, although at times he drank more than others. Venereal disease is denied, and the patient is said never to have suffered from convulsions and has never sustained any unusual or severe trauma, nor any serious illness.

The *family history* shows that the patient's father and mother died from causes unknown, when they were quite old; exact age not ascertainable. The patient was married at 34, had four sons and one daughter; three sons are now living; one son died from causes unknown. All five children had defective eyesight from early youth. The patient's wife died suddenly from heart disease at the age of 58. There is said to have been no mental trouble or insanity or epilepsy in the family.

Physical and Neurological Examination.—The patient is a very old man, fairly well nourished, with a blank expression on his face and sits, for the most part, quietly and without being able or willing to move very much. He has to be assisted to and from his bed, into his chair, and has to be spoon fed. He has a generalized tremor involving all four extremities, the head, face and tongue. This tremor is rhythmical, very regular, is static in character, but is made much more marked by stress and motion, has but little force and small amplitude, and disappears during sleep. In the head it causes to and fro nodding movements of a very rhythmical character. In other words, it is a typical paralysis agitans tremor. The patient also shows the typical deformity suggestive of this condition, particularly marked in the attitude of the fingers and hand, which appear in the posture usually described as pill rolling.

Coördination.—Both equilibratory and non-equilibratory are good. The patient cannot walk, and skilled acts are impossible of performance, both on account of the tremor and also on account of the deformity due to the paralysis agitans condition. Speech, however, is mechanically properly performed, but the patient talks in a rambling and incoherent manner, which will be described later.

Reflexes.—Both deep and superficial are equal and active and there is no Babinski and no clonus. The pupillary reflexes are all normal.

Muscle Strength.—Is normal for a man of his advanced age, and there are no abnormal associated movements.

Muscle Tone.—Particularly in the muscles of the arm, is increased. This increase in muscle tone is also quite evident in the muscles of the neck, particularly the trapezius and sternocleidomastoid.

Electrical Reactions are normal.

Sensory Examination discloses nothing abnormal and all the cranial nerves, including the fundus findings, are negative, excepting in the distribution of the 7th, wherein the muscles of expression are found to lack that mobility which they should have. The face is mask-like and expressionless and smooth.

Mental Status shows the changes usually found in advanced cases of senile dementia, namely, there are grave memory defects, both for recent and remote past and for dates. There is incoherence and confusion, with considerable clouding. The case presents absolutely nothing unusual, and has been recognized for a number of years as an ordinary case of paralysis agitans.

CASE 2. The nephew of this patient is also an inmate of the same ward at the Kings County Hospital and has been for a number of years. W. F., 39 years of age, single.

He began to walk at the age of 3½ years. The explanation given for the retardation of this function by his parents and his physician was that he had a weak back and flabby muscles, but his parents were told that he would grow stronger as he became older. He, however, was never able to walk properly, and until the 16th year he always had to walk on his toes in order to support himself in walking. He was never able to walk with his feet firmly on the ground, for fear of falling, and if he attempted locomotion in this manner he would fall backward; also, not quite so frequently, he fell forward. Aside from the profound retardation in walking, as a child he developed properly, talking at the age of one year, and the teeth appearing when he was six months old. Mentally, his development is said to have been normal in every respect. The first external evidences (hair on the pubes) of puberty appeared at the age of ten, and he is said to have had quite prominent genitals long before this, first noticed when he was five years of age, by his mother. The boy was never very tall for his age and was always considered dwarfish; even as a child it was remarked that he was much smaller than his companions.

The first signs of muscular atrophy appeared symmetrically about the hips and the back, and almost at the same time the lower limbs were noticed to be flabby and weak and atrophic. The muscular atrophy has spread very slowly indeed, and it is only during the past five years that any was evident in the shoulder girdle muscles, which are now, however, quite atrophic. His arms and forearms are also affected; also the muscles of the face and neck, of the trunk and abdomen are involved.

As a child, he is said to have escaped all the children's diseases, and in fact, has been particularly fortunate in being free from any sort of illness excepting the muscular atrophy. He, however, suffered always from childhood from periodical headaches which lasted three or four days each month and attacked the whole of the head. His family was peculiar in this respect, for his mother and his brothers and sisters and one of his uncles and he himself have always been subject to these same paroxysmal headaches in identically the same way, namely, they would last for from three to four days each month without being susceptible of relief.

The patient's mother was married twice and had two sons by her first marriage, and six children—four sons and two daughters—by her second marriage. The patient was the fifth child born from his mother's second marriage. All the children are living, and all of them from both marriages are perfectly well physically and mentally. In fact, all of these descendants have been practically free from any sort of illness, even the usual children's diseases having escaped them. They have suffered from no deformities, no convulsions and no attacks of mental trouble or of nervous trouble. The patient's parents and relatives have been interrogated, and it has been possible to trace three generations of the patient's relatives without finding any trace of a similar illness to the patients, in any of the ascendants.

A peculiar feature of this case which should be mentioned is the fact that this patient has never experienced sexual desire, although half a dozen times during his life he has had erections with emissions without masturbation.

The physical examination and neurological examination are absolutely negative in every possible respect excepting in so far as they relate to the x-ray findings and the condition of the muscles. The muscle strength through the body generally is greatly lessened, particularly in the extremities. There is still a very little strength in the muscles of the neck and abdomen and in those of the chest. The muscles of the spine and extremities are very much atrophied and the tone is greatly lessened, there being hardly the semblance of any muscular tissue or power in them.

The electrical reactions show no polar changes, but there is a considerable degree of lessened electrical irritability to both faradism and galvanism, the relative changes at the two poles, however, being normally maintained in the atrophic muscles. There are no sensory changes, and the mental status is normal.

The x-ray of this patient shows a definitely enlarged sella turcica. Dr. Archibald P. Evans, who has made a number of examinations for Dr. Timme, finds that the x-ray plate shows a definite pineal shadow such as has been described by Dr. Timme and others.

The fundi show distinct bitemporal pallor quite definite and undoubted, but there is no hemiopia.

Repeated examinations and testing show a high degree of sugar tolerance.

There are two very interesting points in the family history in both of these cases. In the case of the children of the uncle, it is noteworthy that all of them were very early affected by defective eyesight. The significance of this is not clear. The patient's mother and his brothers and sisters were subject to paroxysmal headaches lasting from three to four days, being periodical in character, occurring once each month. The significance of this fact can only be guessed at. There is a bitemporal pallor in the fundus of this patient to explain the headaches on the grounds of pressure from an enlarged pituitary or pineal gland, most likely pituitary. Whether a suspicion is justifiable in the mother and in the other members of the family suffering from these headaches that either the epiphysis or the hypophysis was responsible for the incidence of the headaches is a question. The patient continues to have these paroxysmal periodical headaches, but the other relatives no longer suffer from them.

The x-ray examination made in the case of the uncle shows nothing. The eye examination in this patient also discloses nothing. Tests for sugar tolerance in the younger patient have been repeatedly made and show a very high degree of sugar tolerance.

It may be perhaps important to draw attention to the fact that pubic hair appeared in the case of the nephew at a rather early age, and that also he is said to have had particularly well-developed genital organs when quite young. This possibly may be an indication of early atrophy of the pineal gland, or at least there is suggested the possibility that there was in this patient a disturbance in function of this gland.

Book Reviews.

Physical Exercise for Invalids and Convalescents. By Edward H. Ochsner, B.S., M.D., F.A.C.S. Illustrated. St. Louis: C. V. Mosby Co. 1917.

This small volume of fifty-four pages is designed by its author to provide a convenient, compact manual of physical exercises for patients who are convalescing from surgical operations, or from severe illnesses and, also, for persons who are engaged in sedentary work and who, for the need of proper physical exercise, lack vigor. He has accordingly arranged, in an easily comprehended form, a series of forty exercises which may be performed without apparatus and in the patient's own room. A simple statement of the importance of exercise, with a few rules regarding their proper performance, form an opening chapter. Each exercise is described clearly and is accompanied by an illustration. It will prove its convenience and usefulness.

A Study in Hospital Efficiency as Demonstrated by the Case Report of the First Five Years of a Private Hospital. By E. A. Codman, M.D.

The previously issued reports on the end result system as demonstrated by this author have become well known. The present report is divided into three parts. The first part is called The Case Report and is "a practical illustration of the fact that it is possible to use the end result system in a hospital." Part two is on the financial report and is "an illustration of the money value of a surgeon's services, and the influence of the charitable hospitals on it." Part three is called the new organization and is "an illustration of how a group of earnest men may compete with the cliques who dominate the charitable hospitals in any city." The volume is well worth reading.

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THE GOVERNMENT WAR-RISK INSURANCE.

IN place of the pension system which has prevailed in our Army and Navy from time immemorial, the Government has inaugurated an excellent plan of War-Risk Insurance for the benefit of all who see active service in the present war.

The following persons are entitled to apply for this form of insurance:

(1) A commissioned officer (including a warrant officer) in active service in the military or naval forces of the United States.

(2) Any person, male or female, enlisted, enrolled, or drafted into active service in the military or naval forces of the United States, including non-commissioned and petty officers and members of training camps authorized by law.

(3) Any member of the Army Nurse Corps (female) or of the Navy Nurse Corps (female) while employed in active service under the War Department or Navy Department, respectively.

Any of the foregoing persons may take out a Government War-Risk Insurance policy ranging in amount from $1000 to $10,000. The premiums are to be paid monthly, and arrangements may be made whereby they may be deducted automatically from the monthly dues to the insured. For example, a person 21 years of age may take out a policy for $1000, for which sixty-five cents would be deducted from each month's wage. The monthly dues on a policy for $10,000 would be $6.50, and intermediate sums in proportion to their amounts. The premiums increase slightly with the age of the insured.

The policy covers partial as well as total disability, and death. The benefits will be paid by the Government in monthly installments to the insured, or to his heirs or beneficiaries. They are not subject to the claims of creditors of the insured or beneficiaries, nor are they assignable. Under certain restrictions, the insured may change the beneficiaries without their consent. In the instances above cited, the monthly payments would amount to $5.75 and $57.50, respectively. The policy covers twenty years, and at any time within five years after the close of the war, it may be changed to a life policy without any medical examination.

The army surgeons of the lowest rank, First Lieutenants, receive an annual salary of $2000; the next in rank, Captain, receives $2400; and a Major, $3000. These amounts are increased ten per cent. every five years, up to forty per cent. The age-limit of the physician's enlistment is fifty-five years. These salaries, in conjunction with the possible war-risk insurance, are probably more favorable than the former arrangement. The private soldier is far better provided for than he was under the old régime. The army surgeon receives no allowance by reason of dependents, nor is he compelled to turn over a portion of his salary to them, as is the man in the ranks. It is to be hoped that the army physicians, generally, who enlist, will avail themselves of the benefits of the war-risk insurance.

PRENATAL CARE AND INFANT MORTALITY.

THE Division of Hygiene of the State Department of Health, under its director, Dr. Lyman A. Jones, has instituted a system for the fostering of pregnancy care, which is part of the general campaign to offset the ravages of war by a stricter and more efficient manner of saving infant life.

This system of pregnancy care consists of a series of letters which may be sent to any prospective mother in the State. The first letter is to be sent during the first month of pregnancy, and is full of sound advice adapted to the needs of the mother at this time. Each following month of pregnancy has its appropriate letter, until the series of nine are sent. For example, the first letter urges the necessity of a care-free and happy atmosphere during pregnancy, and refutes the old belief in the possibility of ''marking'' babies. The second letter recommends choosing at once a doctor and a nurse, and explains the desirability of being under medical charge from the beginning. The third letter deals principally with diet, the fourth with simple rules of hygiene and advice regarding proper clothing. The fifth letter is devoted to the baby, his clothes and articles necessary for his care. The remaining letters are full of miscellaneous and necessary information. These letters are excellently arranged, and are calculated to appeal by the sympathetic and reassuring manner in which they are written. They will be furnished free to any physician who may wish them, or to any patient whose name is sent by her physician to Dr. Jones. The Department is anxious, in this manner and through the coöperation of doctors throughout the State, to extend its field of service, and in this practical way to prevent the unnecessary loss of infant life to this community through the ignorance and carelessness of mothers.

HEALTH LEGISLATION RECOMMENDED BY STATE DEPARTMENT OF HEALTH.

The State Department of Health has submitted to the Legislature five important bills. The first bill relates to the urgent need of proper supervision of the health of school children. It reads:

''To provide for the appointment of a school physician and school nurse in each city and town, but authorizing cities and towns under conditions to unite in such appointments; such officials to aid in establishing minimum standards in the inspection of school children and school buildings, under the supervision of the State Departments of Health and Education.''

There has never been adequate regulation affecting the isolation of prisoners who are put in jail suffering from communicable diseases.

''Since it is a matter of experience that persons committed to penal institutions are frequently suffering from disease, especially tuberculosis and venereal diseases, often in a communicable stage, a bill, prepared after conference with the Board of Prison Commissioners, requires a medical examination such as the department may prescribe of all individuals committed for a period of thirty days or more. The object of this measure is to ensure that a prisoner suffering from disease shall not endanger fellow inmates by transmitting infection to them during detention and to safeguard against the possibility of the disease being communicated to others after discharge.''

The third measure provides for the destruction, after periods of time, of confidential reports on venereal diseases, and the fourth measure prescribes the conditions under which remedies for the treatment of these diseases may be distributed and sold, following to a degree the provisions of present laws relating to the sale of narcotic drugs.

The final measure concerns administrative detail, and aims to provide analysts and chemists of the food and drug division with the same authority as that now held by inspectors in regard to the seizure and destruction of unfit food products.

MASSACHUSETTS MEDICAL SOCIETY DUES.

It will be much appreciated by the officers of the Massachusetts Medical Society if the Fellows will send in their payment of dues promptly. The bills for this year's dues should be in hand, and it is urged that they be met with as much dispatch as possible, as a ready return of remittances will facilitate matters greatly.

MEDICAL NOTES.

Lectures on Treatment of Infected Wounds.—Under the direction of the University and Bellevue Hospital Medical College, New

York, Dr. Edward K. Dunham, Emeritus Professor of Pathology and Major, Medical Reserve Corps, gave a series of five lectures on "Principles Underlying the Treatment of Infected Wounds."

Comparison of City-Bred and Country-Bred Boys.—General Crowder, in reviewing statistics regarding the physical qualifications of city boys as compared with country boys, states that, although the country boy may be more accustomed to hard physical labor, he is not superior in the possession of the degree of physical soundness essential to his acceptance as a soldier.

"A special comparison made by the Provost Marshal General's office between ten large cities and ten rural counties in various parts of the country, shows that of 35,017 registrants in the selected cities, 9969 were rejected, while out of 44,462 registrants in rural areas, 12,432 were disqualified. The result is virtually a tie, as 28.47% of the city boys were rejected as against 27.96% of the country boys."

Reorganization of Cincinnati Hospital.—By a new charter just put into effect, all of the medical, scientific and nursing work in the new Cincinnati City Hospital is placed under the direction of the University of Cincinnati. The charter provides that the medical director of each department shall be the professor in the corresponding department of the medical college. The charter removes the hospital entirely from the sphere of politics. The city will continue to pay the general operating expenses of the hospital, such as the heating and lighting, food, engineers, janitors, etc., while the University will pay all the expenses of the medical, surgical, scientific and nursing service.

Burning of Hospital in Ottawa.—The Water Street General Hospital of Ottawa, Canada, was partly destroyed by fire on January 10. All but one of the 158 patients were saved and another patient died from the effects of the shock.

Connecticut Hospital Burned.—A section of the main building of the Connecticut Hospital for the Insane, at Middletown, Conn., was burned on January 10. About 250 patients were in the building, and all were carried to places of safety.

WAR NOTES.

Tuberculosis in the United States Army.—According to Colonel George M. Bushnell of the Surgeon-General's Department, less than 1% of the 800,000 men examined for the United States Army were found to be tubercular. He stated that measures are being taken to keep infected men from entering the Army by draft and from remaining in the Army after the disease has been discovered.

State of Soldiers' Health at Camp Devens.—To refute erroneous rumors which have been sent about regarding the prevalence of pneumonia at Camp Devens, the following official figures have been published. Among the 27,000 men in the Camp at the present time, there are but six cases of pneumonia. Since October 1, there have been 44,000 men in the Camp, and of this number twenty deaths have occurred. In the last eight weeks there were but six deaths.

"Since the hospital opened in September, there have been 5010 patients admitted, including all sent for measles, for minor treatments of various sorts and for observation. Orders are that no soldiers shall be kept overnight at the infirmaries in each regiment. All are sent to the base hospital,—a remarkably equipped institution, presided over by physicians and surgeons of high reputation, who left their practice throughout New England, and are commanded by Major Channing Frothingham, formerly of the Peter Bent Brigham Hospital, Boston."

Surgeon-General's Report.—The report of the Surgeon-General of the Army has been issued. It states that the general health conditions of the United States Army, for the calendar year 1916, were in all respects satisfactory, and, in view of the unusual circumstances connected with the mobilization on the border and the expedition into Mexico, may be fairly regarded as specially creditable to those directly associated with the management of all matters pertaining to the health and sanitation, particularly of the troops serving in the Southern Department. The mean strength (corrected for time) of the entire Army, American and native troops, including the National Guard, was 176,803 for the year 1916. Its non-effective rate from all causes in the year was 24.26 per 1000, and for disease alone, 20.55, both of which ratios were slightly lower than for the previous year, 25.22 and 20.85, respectively. The mean strength of the entire Regular Army for 1916, upon which the statistics contained in the annual report are based, was 110,454. The non-effective rate for the entire Regular Army for 1916, from all causes, was 26.99 per 1000, and for disease alone 22.63, being slightly higher than for the previous year, 25.22 and 20.85, respectively, but much lower than the average of these rates for the decade, 34.99 and 29.65, while that for the year 1906 was 47.86 per 1000, from all causes. The death rate of the entire army for 1916, from all causes, was 5.19 per 1000, compared with 4.45 for 1915, which was slightly higher than the lowest mortality rate in the Army for many years, 4.40 for 1914. The death rate from disease was 2.71 per 1000 for 1916, as compared with 2.53 for 1915; the average for the decade was 2.94 and for the year 1906, 3.77.

Commissioning of Nurses.—About one hundred nurses to be attached to the War Emergency Hospital at Commonwealth Armory, will be commissioned by Governor McCall as second lieutenants. The Women's Council of National Defense will be asked to coöperate in the selection of the nurses. These nurses will be called for duty only in some grave emergency, and then for a limited time only. Governor McCall in sending official notice of his intentions to General Ames stated:

"England and Canada, since the war began, have seen the necessity and desirability of recognizing their nurses and have commissioned those of proper training and experience in service, with the rank and pay of second lieutenants.

"In recognition of the value of such service, and the honor of the profession, I shall be glad to commission, upon the approval of the Military Council, with the rank of nurse and second lieutenant, in the State Guard, such nurses."

SPECIALIZED EXAMINATION OF RECRUITS.—For the examination of recruits, which will come under the next draft, two committees have been formed in Boston, made up of specialists in a variety of fields, which will give detailed and expert examinations to all men who appear to require a more thorough examination than that given by the local draft board. These two committees are under the direction of Dr. Henry Jackson, who will have headquarters at the City Hospital, and Dr. Charles L. Scudder, who will have headquarters at the Massachusetts General Hospital. There are more than fifty of such committees throughout the State, and to these committees will be sent all doubtful cases and cases which may appeal to the board for a disputed examination.

"The medical representatives of a local board, for example, may be uncertain whether the sight of a registrant is actually as faulty as he would make it appear, and may have neither time, equipment nor expert knowledge for the more elaborate examination required to make certain.

"In such case of doubt the registrant may be referred to the advisory committee. So, too, it is understood, a registrant dissatisfied with the local examination may seek a supplementary examination from the expert committee.

WAR RELIEF FUNDS.—On Jan. 19 the totals of the principal New England war relief funds reached the following amounts:

Halifax Fund................	$682,496.86
French Wounded Fund	314,670.72
Armenian-Syrian Fund	279,627.37
Permanent Blind Fund	135,925.24
Italian Fund	131,725.18

BOSTON AND MASSACHUSETTS.

AWARD OF HONORS TO HARVARD MEDICAL STUDENTS.—On January 23, at the Harvard Medical School, there was held a meeting to award honors and present diplomas to students of the first rank in the second, third and fourth classes. President Lowell was present and an addresss was delivered by Bishop Lawrence. Dean Bradford presented the diplomas. Following the meeting an informal reception was given by the Students' Association.

RESOLUTION REGARDING SUGAR CONSERVATION BY MALDEN MEDICAL SOCIETY.—At a meeting of the Malden Medical Society, held recently, the following resolutions regarding the conservation of sugar were drawn up and were forwarded to Food Administrator Hoover, at Washington, and Mr. Endicott, the food administrator of Massachusetts. The resolutions were as follows:

"The members of this society are witnesses of the distress resulting from the lack of sugar in many homes. Children, invalids and the aged are especially suffering from the lack of this important food. We note the abundance of candy, which is an expensive and often injurious luxury. Immediate action is needed for the relief of present conditions.

"We suggest that a system be instituted which will permit an adequate per capita allowance of sugar weekly, and that no sale of sugar for the manufacture of luxuries be allowed until a liberal and continuous supply for domestic use is assured.

"We are not unmindful of the commercial arguments against this proposal, but we submit that the present hygienic exigency rises immensely above all other considerations."

BOSTON HOMEOPATHIC MEDICAL SOCIETY.—At the annual meeting of the Boston Homeopathic Medical Society, held at the Evans Memorial Hospital, the following officers were elected: Dr. Edward P. Ruggles, president; Dr. Mary A. Leavitt, first vice-president; Dr. Clarence Crane, second vice-president; Dr. Clifford D. Harvey, secretary; Dr. Nathan S. Eastman, associate secretary; Dr. T. M. Strong, treasurer; Dr. Ernest C. Jordan, auditor, and Drs. Howard E. Allen, Howard P. Bellows and Charles T. Howard, censors.

SHELL SHOCK.—At the meeting of the Boston Society of Psychiatry and Neurology, held at Harvard Medical School on January 8, Dr. Frankwood E. Williams, secretary of the National Committee for Mental Hygiene, presented several reels of films on the subject of "Shell Shock."

SPRINGFIELD ACADEMY OF MEDICINE.—At the January meeting of the Springfield Academy of Medicine, held on January 8, Dr. Robert M. Green, of Boston, spoke on "Abdominal Visceroptosis." The February meeting will be addressed by Dr. W. P. Graves of Boston, the March meeting by Dr. Willard Bartlett of St. Louis, the April meeting by Dr. E. S. Judd of Rochester, Minn.

HOSPITAL BEQUEST.—By the will of the late Miss Frances J. Chamberlain of Exeter, N. H., the Exeter Cottage Hospital is the recipient of a gift of $500.

Obituary.

THEODORE CALDWELL JANEWAY, M.D.

The sudden and untimely death of Dr. Theodore Caldwell Janeway, of Baltimore, adds another illustrious name to the list of recent losses at Johns Hopkins University. Dr. Janeway was born in 1872, the son of the late Dr. Edward S. Janeway, of New York City. He was graduated from Yale in 1895, and was at once appointed instructor in bacteriology in Columbia University. He later became professor of medicine in the College of Physicians and Surgeons at Columbia. In 1914 he was elected professor of medicine at Johns Hopkins, succeeding Dr. L. F. Barker. Upon the entry of the United States into the war, Dr. Janeway was appointed a major in the Medical Officers Reserve Corps. He had done a considerable amount of research work for the government. His work on blood pressure is more widely known than any other of his other writings. He is survived by a widow and five children.

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Miscellany.

GOITRE IN ALBERTA.

The following letter which appears in *The Calgary Daily Herald* gives an illuminating account of the prevalence of goitre in this section of Canada:

"An efficient medical health department is supposed to be a constituent part of the government of every subdivision of the British Empire, but in this branch of the organization, Alberta is woefully lacking.

"It is the duty of competent officials in a new country like this, to keep close supervision of all diseases and note any variations arising consequent on surroundings, climate, altitude, etc., etc., and more especially on all diseases liable to have far-reaching effects on the present or future well-being and health of the community.

"By far the most serious disease that is facing the people of the province as yet is goitre, commonly known as thick neck or Derbyshire neck, which has already claimed its victims by thousands, and yet the department refuses to recognize the fact of its presence even when I called its attention to it in the watershed of the Bow river, and offered ocular proof, more than twelve months ago, through our member of parliament, the Hon. C. W. Fisher. Nothing has been, or is being done by the government towards the control or cure of the disease, although I find and have reported that in the village of Cochrane alone 100 per cent. of the British born girls located here before puberty, and in residence since 1910, have contracted the disease. The surrounding country shows a similar state of affairs, and in Calgary, from the amount of goitrous deformity I can see amongst the young women passing along the streets, I would expect about the same approximate percentage. Medical scientists have not decided whether goitre is caused by lime, germs, microbes of organisms in the water supply, hence they do not know what antidote to apply to the raw water. They have found, however, that whatever it is in the water that causes the disease can be destroyed by heating the water to a temperature of over 160 degrees Fahrenheit. Hence it follows that boiling all water intended for drinking purposes will reduce to a minimum the risk of contracting the disease, whilst also, by cutting off the supply of poison to the system, it will have a tendency to retard, if not to reduce, the growth of the tumor.

"A health ordinance should be promulgated, making it compulsory that all fluid for children's drink should be previously boiled (milk should be heated to over 160 degrees Fahrenheit) and that men and women should use tea, coffee or beer, if they find plain boiled or distilled water unpalatable. Goitre is a disease which, when once acquired and not cured, can be transmitted even to the third and fourth generation of posterity, therefore people with this disease should not be permitted to indulge in parenthood but should have 'birth control' compulsorily forced upon them, otherwise we are apt to find goitre, with its consequent deformity and mental degeneracy, the rule in the next generation of the native born here, and freedom from the disease the exception.

"Females are more quickly susceptible to the disease than males, although it attacks both sexes. People who are not exposed to the infection before maturity take a considerable longer time to contract the disease. Every case of common goitre is a prospective case of exophthalmic goitre with its necessity for operative interference and consequent dangers. I consider that a common goitre has passed the half-way post towards exophthalmic.

"It has frequently happened in the past that chemists in their laboratories have compounded medicinal preparations for the cure of various ailments long before the medical scientists have succeeded in isolating the germ which has caused the disease. In the case of goitre, chemists in the United States claim that they have discovered combinations of remedies which are giving satisfactory results in the treatment of the disease. I find, however, on correspondence, that none of them are prepared to quote a percentage of cures effected, but there is an expression of general willingness on their part to submit their remedies to an official test in order to establish a percentage of cures, and to demonstrate any shortcomings of the remedies which would enable the chemists to make improvements. I attempted, with the aid of the Hon. C. W. Fisher, to have this investigation undertaken, under government auspices, in the city of Calgary, where there are some thousands of cases with fairly identical surroundings, but was unsuccessful in my application.

"Delay in the discovery of the cause or of a cure for this disease is daily adding to the number of the victims, as well as to the immensity of the task of handling it.

"So now, again impressing upon your readers the vital necessity of 'boiling all fluids for drinking purposes,' I think we may safely leave the matter in the hands of the ladies to have the necessary legislation adopted, that will not only protect their children, but will protect their own figures from a deformity which is plainly recognizable to anyone who sees them.

T. G. Ritchie, M.D., L.R.C.S.,
Edinburgh, 1872.

Cochrane, Alta., April, 1917."

THE MANDRAKE IN FOLK-MEDICINE.

The London *Lancet* for November 17, 1917, gives the following account of the mandrake in folk-medicine:

"The root of the mandrake (*Atropa mandragora, M. Officinarum*) is a ready-made amulet, resembling, as it does, the lower limbs of a human being and often a grotesque human body. A naked mannikin may suggest to primitive minds all kinds of thoughts. Hence in Scripture the fruit or root of the mandrake figures as a love-charm (Genesis xxx.), by means of which Rachel is enabled to escape the reproach of barrenness and to become the mother of Joseph. At a later period, as is shown by Professor Sir James G. Frazer in his recently published monograph on 'Jacob and the Mandrakes,' the root, rather than the fruit of the plant, became a sovran amulet. Solomon, according to 'the Arab Dioscorides,' Ibn Beithar, carried a mandrake in his signet ring, which gave him command over the jinn, or spirits. The plant, Ibn Beithar avers, is a remedy for all maladies caused by jinn, demons, and Satan. It cures lameness, cramp, epilepsy, elephantiasis, madness, loss of memory, besides affording protection against every kind of mishap. The mandrake root was well known as a charm to the ancient Greeks and to Pliny and the Romans, and it reappears in the Middle Ages as the center of a perfect tangle of sinister superstition. As a rule, the plant was held to spring up under the gallows where it was fertilized by the drippings of corpses. In order to obtain it a laborious ritual had to be observed. It was death to dig it up, so its roots were carefully loosened, and a dog, preferably black, was tied to it, which, springing after its master or tempted by food, drew the plant out of the ground and died in the act, while the plant shrieked dolefully. The evil genius having left the plant and passing into the dog, the root might be safely handled and used as a valuable ingredient in the pharmacopoeia, where it figured as a promoter of conception and as a cure-all. The Transylvanian gipsies still practise this ritual. In Syria and the East generally the mandrake is still used as a charm, and the making of counterfeit mandrakes, closely resembling hairy ape-like men, is carried on as an industry. Sham mandrakes are often sold for large sums.

"'To make the counterfeit mandrake,' says 'A Thousand Notable Things' (London and Salisbury, 1791), 'which hath been sold by deceivers for much money, do thus as followeth: Take the great double root of Briony, newly taken out of the ground, and with a fine sharp knife frame the shape of a man or a woman ['the womandrake' of our rustics] . . . with his stones and cods, and other members thereto, and when it is clean done, prick all these places with a sharp steel, as the head, the eyebrows, the chin, and privaties, and put into the said holes the seeds of millet, or any other that brings forth other small roots, that do resemble hairs (which Leek seed will do very well, or else Barley). After this, put it into the ground, and let it be covered with earth, until it have gotten upon it a certain little skin, and then thou shalt see a monstrous idol, and hairy, which will become the party, if it be workman like, or cunningly made or figured.' The quotation is from Mizaldus. 'Another trim way for the like, is in the *Natural and Artificial* conclusions, englished by Thomas Hill.'

"It is curious to reflect that this quotation from Mizalde was served up to our great grandmothers as lately as 1791. Present-day rustics attach great virtue to the mandrake root, which is eaten as a cure for indigestion. The root is said to taste bitter, but the fruit can be eaten, a little at a time, and the fruit, perhaps, rather than the root, was the ancient mandragora, used as an anaesthetic or narcotic, and known as such to Shakespeare, who, always keenly reflecting the popular beliefs of his age, makes Iago say to his dupe—

> 'Not poppy, nor mandragora,
> Nor all the drowsy syrups of the world,
> Shall ever medicine thee to that sweet sleep
> Which thou owedst yesterday.'

The literature of the mandrake is enormous. Perhaps one of the best accounts of it was given by Mary Howitt in her poem 'The Mandrake,' which figured in her charming work, 'Birds and Flowers and Other Country Things,' published in 1838."

WAR COMMITTEE FOR THE UTILIZATION OF HOSPITAL FACILITIES.

A meeting of the War Service Committee of the American Hospital Association was held in New York City on Wednesday, Nov. 21, 1917. The War Service Committee is a national committee which has been instructed by the American Hospital Association "to inform itself of all military facts and requirements in which hospitals may be concerned, to be in readiness to consult with military authorities in relation thereto, and to assist wherever hospital service may be of value to the country." The committee has established headquarters in Washington, which will be in charge of the secretary, Mr. Richard P. Borden, of Fall River, Mass.

The following statement has been issued by Dr. S. S. Goldwater, acting as chairman:

"From such information as the members of the War Service Committee have thus far been able to gather, the committee infers that it is the policy of the Army to ignore existing hospital facilities in its preparation for the care of invalided men. It would be wiser, in the opinion of the committee, to formulate a program based upon the principle that existing medical institutions, including hospitals and sanatoria, should be utilized wherever and whenever they are capable of rendering the required service. The unnecessary duplication of hospital plant and organization appears to the committee to be deplorable at a time when the nation should husband its resources in order to increase its military and national efficiency.

"The ideas of the War Service Committee on this subject are practically the same as those of the British Ministry of Pensions, which is responsible for the medical treatment of disabled men, who have been discharged from the British Army. In a statement made to the British Hospitals Association on October 19th, 1917, Mr. Horne, representing the Pensions Ministry, said that the Ministry 'had no intention of setting up in various parts of the country institutions, which would compete with established voluntary hospitals. They had in certain instances provided institutions of which there was a dearth, such as those for neurasthenia, tuberculosis, and eiplepsy; generally, the accommodation required was provided by enlarging existing institutions.'

"The committee has been unable to learn of any government plan for the care of discharged soldiers who may still require ambulant medical treatment. In this connection, it might be advantageous to consult recent orders of the British Army Council in relation to the handling of two categories of patients: first, soldiers, who at the time of their discharge require further treatment; second, soldiers who at some time after their discharge are found to require further treatment. The instructions in question apply 'to those suitable for treatment as out-patients in hospitals.'

"In order to facilitate coöperation between the Army and civilian hospitals, the committee suggests the organization of an Auxiliary Medical Corps for Home Service. This Corps should be composed of physicians and surgeons who are ineligible for active military duty, and should be made up, in the first instance, of men holding hospital appointments.

"The committee maintains that the efficiency of hospitals and the adequate preparation of recent graduates in medicine for clinical practice, not only among the civilian population, but in the Army, depends in large part upon the maintenance by civilian hospitals of an adequate system of clinical training. In the opinion of the committee, it is inadvisable for hospitals having a graduated intern service of eighteen, twenty-one, or twenty-four months' duration to abandon such service, in order to substitute an ungraded or improperly graded service of only twelve months' duration."

The chairman has been authorized to present the views of the American Hospital Association to the military authorities through the General Medical Board of the Council of National Defense, or otherwise.

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ANTHRAX IN MASSACHUSETTS.

The bulletin of the State Department of Health for Oct., 1917, gives an account of the prevalence of anthrax in Massachusetts during the current year. Whereas since 1908, the incidence of this disease has not risen above eleven cases per year, in 1916 there were 31 cases and for the first nine months of 1917, there have been 39 cases.

"The demand for leather has compelled the manufacturer to secure hides from new areas in foreign territory, with regard to which our knowledge as to the prevalence of diseases is meager. This increase of anthrax has been coincident with the shipping of hides from these newer sources.

During the first nine months of the present year, 6 of the 39 cases reported have been fatal. There was 1 case of pulmonary anthrax; the remainder were external. The pulmonary case and 34 of the others were infected through the handling of hides, 3 from the handling of hair, and 1 from the handling of wool.

English investigators have reported recently finding cases of anthrax simulating cases of cerebrospinal meningitis, the diagnosis of anthrax not being established until anthrax bacilli had been demonstrated in the spinal fluid.

Since anthrax cannot be accurately diagnosed except through bacteriological findings, smears have been urged in all cases, with the following results:

	Cases.
Smears positive,	24
Diagnosis made at autopsy,	1
Smears negative,	8
No laboratory examination,	6
	39

Of the 8 negative smears, 4 were isolated cases, each being the only case in the locality, and each handled hides which were not associated with other cases of the disease. The 4 remaining negative smears, in cases 4, 17, 29 and 35, occurred in association with other cases in fellow workmen who had positive smears, and thus diagnosis was undoubtedly correct.

Of the 6 cases from which no smear was taken, several were associated with positive cases, suggesting that no error was made in the diagnosis. To illustrate: cases 20, 22 and 24 all handled the same lot of hides. A smear from case 24 was positive, also case 6 was a fellow workman with case 16, the latter case being confirmed by a smear.

Thus the diagnosis was confirmed bacteriologically in 25 cases (including 1 where the diagnosis was made at autopsy) and was undoubtedly correct in 7 other cases,—a total of 32 certain cases.

When a stevedore or longshoreman was the first case reported, the manufacturer to whom the hides handled were consigned and the board of health of the town to which the shipment was being forwarded were notified of the probable infection of the hides in question.

For prevention of infection the United States Bureau of Animal Industry recommends that hides be immersed for not less than forty-eight hours in a 1 to 1000 solution of bichloride of mercury, or immersion in a 10 per cent. salt solution containing not less than 2 per cent. hydrochloric acid for forty-eight hours.

For hair disinfection, in a recent report of the Local Government Board (new series, No. 112) it states 'that for steam disinfection to be successful, the cases or bales should be opened, the bundles removed and most of the strings cut, unless the temperature inside the steam disinfecting apparatus is maintained at 230° F. for half an hour.' "

SHELL SHOCK AMONG TROOPS.

The situation regarding the prevalence and care of shell shock among troops is admirably summed up by Major Thomas W. Salmon, medical director of the National Committee for Mental Hygiene, in the report of his recent studies in England. He states:

"No medico-military problems of the war are more striking than those growing out of the extraordinary incidence of mental and functional nervous diseases—'shell shock.' Together these disorders are responsible for not less than one-seventh of all discharges for disability from the British Army, or one-third, if discharges for wounds are excluded. A medical service newly confronted like ours with the task of caring for the sick and wounded of a large army cannot ignore such important causes of invalidism. By their very nature, moreover, these diseases endanger the morale and discipline of troops in a special way and require attention for purely military reasons.

"Although an excessive incidence of mental diseases has been noted in all recent wars, it is only in the present one that functional nervous diseases have constituted a major medico-military problem. As every nation and race engaged is suffering severely from these disorders, it is apparent that new conditions of warfare are chiefly responsible for their prevalence. None of these new conditions is more terrible than the sustained shell fire with high explosives which has characterized most of the fighting. It is not surprising, therefore, that the term 'shell shock' should have come into general use to designate this group of disorders. This terse name is applied to practically any nervous symptoms in soldiers exposed to shell fire that cannot be explained by some obvious physical injury. If all neuroses among soldiers were included in these groups, the use of the term 'shell shock' might be defended. But many hundreds of soldiers who have not been exposed to battle conditions at all, develop symptoms almost identical with those in men whose nervous disorders are attributed to shell fire.

"The non-expeditionary forces supply a considerable proportion of these cases. One of the chief objections to the use of the term 'shell shock' is the implication it conveys of a cause acting instantly. The train of causes which leads to the neurosis that an explosion ushers in is often long and complicated. Apparently in many military cases mental conflicts in the personal life of the soldier, that are not directly connected with military situations, influence the onset of the neuroses. Thus men who have been doing very well in adapting themselves to war develop 'shell shock' immediately after receiving word that their wives have gone away with other men during their absence. With a view to discovering the prevalence of the neuroses and insanity, Sir John Collie, president of the Special Pension Board on Neurasthenics, made an analysis of 10,000 discharge certificates for disability, interpreting the diagnosis given in the light of his very large experience. He found that of these 10,000 consecutive cases, the neuroses constituted 20 per cent.

"If the policy is adopted of caring in France for mental cases likely to recover and evacuating all others to the United States at once or at the expiration of six months' treatment, we may expect to receive at the port of arrival in the United States, not less than 250 insane soldiers per month, from an expeditionary force of 1,000,000. It should be remembered that if the policy recommended of evacuating to the United States only the patients who fail to recover in six months in France is adopted, some very intractable cases will be received. For the most part these will be patients with a constitutional neuropathic make-up—the type most frequently seen in civil practice.

"Many of these cases will prove amenable to long-continued treatment and much can be expected from the mental effect of return to the United States. It is very important not to fall into the mistake made in England of discharging these severe cases with a pension because of the discouraging result of treatment. To do so will swell the pension list enormously, as can be seen by the fact that fifteen per cent. of all discharges from the British army are unrecovered cases of mental diseases and war neuroses. Quite aside from financial considerations, however, is the injustice of turning adrift thousands of young men who developed their nervous disability through military service and who can find in their home towns none of the facilities required for their cure. It is recommended, therefore, that no soldiers suffering from functional nervous diseases be discharged from the army until at least a year's special treatment has been given."

INCREASE IN TUBERCULOSIS.

The statement cabled from London that Germany is suffering an enormous increase in tuberculosis, mainly as the result of the restricted food supply, calls forth a warning from the Department of Health that, despite a much greater amount of food in this country, a similar disastrous increase in tuberculosis and other diseases may occur here if the public does not take a greater interest in the science of nutrition.

Even in England, where, according to cabled reports, meat and bread are selling for prices lower than those prevailing here, the war has caused a marked increase in tuberculosis. Newsholme, the chief medical officer of the Local Government Board, has just compiled figures showing that in England and Wales the increase in the tuberculosis mortality has amounted to 12% over the figures for 1913. In 1914 the increase amounted to 1582 deaths, to 4621 in 1915, and to 4490 in 1916. Altogether, therefore, in England and Wales alone, the war caused more than 10,000 extra deaths from tuberculosis in three years. Conditions in France are even worse.

In New York City, the Department of Health has on record the names and address of over 35,000 persons suffering from tuberculosis, and of these over 8000 die annually.

A table compiled by Dr. W. H. Guilfoy, the Health Department's registrar of records, shows that the steady downward course of the deaths from tuberculosis has not only been arrested, but that the number this year shows an actual increase over last year's figures. In view of the experiences of the other warring nations, this is certainly disquieting.

Inasmuch as tuberculosis is so intimately associated with under-nourishment, special interest attaches to the report just issued by the Health Department's Bureau of Child Hygiene, concerning the physical examination of school children. According to this report, the number of under-nourished school children in this city is much greater than was heretofore suspected.

According to investigations made by the Health Department's inspectors, one-eighth of all the school children were found to be under-nourished. On the basis of a million school children, this represents the enormous number of 125,000 under-nourished children in the city of New York. One-quarter of this number were so badly under-nourished as to require medical care.

"We have been much concerned," said Commissioner Emerson, "about the great lack of even elementary knowledge among a large proportion of the people concerning the main facts of food and nutrition. Our studies show that this constitutes a distinct health menace. We have been trying to teach the people by means of posters, leaflets, food exhibits and demonstrations, but progress is slow. This winter we began classes of practical instruction in dietetics at some of our Baby Health Stations. This work is carried on by the nurses of the health stations, for they know the needs of the mothers in their district. In passing, I may add that the new activity emphasizes anew the fact that the Baby Health Stations are essentially educational centers. The increase in the death rate from tuberculosis, while only small, should serve as a warning. I hope it will be heeded."

PRINCIPAL CAUSES OF DEATH.

The Census Bureau issues a statement summarizing mortality statistics for 1916:

"According to a preliminary announcement with reference to mortality in 1916, issued by Director Sam. L. Rogers, of the Bureau of the Census, Department of Commerce, and compiled under the direction of Dr. William H. Davis, chief statistician for vital statistics, the 'registration area,' which contained approximately 70% of the population of the entire United States, reported for that year 1,001,921 deaths. Of these deaths, nearly one-third were due to three causes—heart disease, tuberculosis, and pneumonia—and nearly another third were charged to the folowing nine causes: Bright's disease and nephritis, cancer, apoplexy, diarrhea and enteritis, influenza, arterial diseases, diabetes, diphtheria, and typhoid fever.

The deaths from heart diseases (organic diseases of the heart and endocarditis) in the registration area in 1916 numbered 114,171, or 159.4 per 100,000 population. The death rate from this cause shows a marked increase as compared with 1900 (the earliest year for which the annual mortality statistics were published), when it was only 123.1 per 100,000. The increase has not been continuous, however, the rate having fluctuated from year to year.

Tuberculosis in its various forms caused 101,396 deaths in 1916, of which 88,666 were due to tuberculosis of the lungs. Because of progress in the prevention and treatment of tuberculosis of all kinds, the decline in the tuberculosis death rate in recent years has been most pronounced, having fallen from 200.7 per 100,000 in 1904 to 141.6 in 1916, a decrease of nearly 30%. Before 1904 the rate had fluctuated, starting at 201.9 in 1900. Even yet, however, tuberculosis causes more deaths annually than any other malady, except heart diseases, and about 37% more than all external causes—accidents, homicides, and suicides—combined.

Pneumonia (including bronchopneumonia) was responsible for 98,334 deaths in the registration area in 1916, or 137.3 per 100,000. This rate, although lower than that for any year from 1900 to 1910, inclusive, with the single exception of 1908, is higher than that for any of the years from 1911 to 1915, inclusive. The lowest recorded rate for all forms of pneumonia was 127 per 100,000 in 1914. The mortality from this disease, like that from tuberculosis, has shown a marked decline since 1900, when it was 180.5 per 100,000. Its fluctuations from year to year, however, have been pronounced, whereas the decline in the rate for tuberculosis has been nearly continuous.

The only remaining death rate higher than 100 per 100,000 in 1916 was that for Bright's disease and acute nephritis, 105.2. The total number of deaths due to these maladies in 1916 was 75,316; of this number, 69,395 were caused by Bright's disease and 5921 by acute nephritis. The mortality rate from these two causes has increased from 89 per 100,000 in 1900, with some fluctuations from year to year.

Cancer and other malignant tumors caused 58,600 deaths in 1916. Of these, 22,480, or nearly 39%, resulted from cancers of the stomach and liver. The death rate from cancer has risen from 63 per 100,000 in 1900 to 81.8 in 1916. The increase has been almost continuous, there having been but two years—1906 and 1911—which showed a decline as compared with the year immediately preceding. It is possible that at least a part of this increase is due to more correct diagnoses and to greater care on the part of physicians in making reports to registration officials.

Apoplexy was the cause of 58,233 deaths, or 81.3 per 100,000. The rate from this disease increased gradually, with occasional slight declines, from 1900 to 1912, and since 1913 the increase has been continuous.

Diarrhea and enteritis caused 56,763 deaths in 1916, or 79.3 per 100,000. The rate from these diseases has fallen somewhat in recent years, having been 90.2 in 1913, and is very much lower than the corresponding rate for 1900, which was 133.2. Nearly five-sixths of the total number of deaths charged to these causes in 1916 were of infants under 2 years of age.

Influenza was responsible for no fewer than 18,886 deaths in the registration area in 1916, or 26.4 per 100,000. The rate from this malady, which fluctuates very considerably from year to year, was higher in 1916 than in any preceding year since and including 1900, with the single exception of 1901, when it stood at 32.2.

Arterial diseases of various kinds—atheroma, aneurism, etc.—were the cause of 17,115 deaths in 1916, or 23.9 per 100,000. This rate, although somewhat lower than the corresponding ones for 1912 and 1913, is higher than those for 1914 and 1915. The rate for these causes increased continuously from 6.1 in 1900 to 25.6 in 1912.

Deaths from diabetes numbered 12,199, or 17 per 100,000. The rate from this disease has risen almost continuously from year to year since 1900, when it was 9.7.

No epidemic disease, with the exception of influenza, produced a death rate as high as even 15 per 100,000 in 1916. The fatal cases of diphtheria and croup—which are classed together in the statistics, but practically all of which are cases of diphtheria—numbered 10,367, or 14.5 per 100,000 population. The rate for diphtheria and croup in 1900 was 43.3, and the decline of nearly 67% from that year to 1916 is relatively greater than that shown by any other important cause of death. The rate fluctuated somewhat from 1900 to 1913, but has fallen continuously since the latter year.

The mortality rate from typhoid fever has shown a most remarkable and highly gratifying decline since 1900, having dropped from 35.9 per 100,000 in that year to 13.3 in 1916. The proportional decrease in the rate, amounting to 63%, is a close second to that shown for diphtheria and croup. The efficacy of the antityphoid vaccine and of the many improvements in methods of sanitation has been demonstrated in a striking manner by this great reduction in the typhoid death rate.

Measles, Whooping Cough, and Scarlet Fever.—The principal epidemic maladies of childhood—measles, whooping cough, and scarlet fever—were together responsible for 17,586 deaths of both adults and children, or 24.6 per

100,000, in the registration area in 1916, the rates for the three diseases separately being 11.1, 10.2, and 3.3. As in 1913, measles caused a higher mortality than either of the other diseases, but in 1914 and 1915 whooping cough had first place. In every year since and including 1910, as well as in several preceding years, measles has caused a greater number of deaths than scarlet fever. The rate for scarlet fever in 1916 was the lowest on record, while that for whooping cough, although considerably below the highest recorded rate for that disease—15.8 in 1903—was far above the lowest—6.5 in 1904.

Acute Poliomyelitis.—Acute anterior poliomyelitis, comomnly called infantile paralysis, caused 7130 deaths in 1916, representing a rate of 10 per 100,000 population. This disease developed in epidemic form in that year, and the resultant mortality showed an enormous increase. The rate from infantile paralysis declined from 2.7 per 100,000 in 1910—the first year in which this malady was reported separately as a cause of death—to 1 per 100,000 in 1915, the decrease having been continuous from year to year, except for an increase between 1911 and 1912. The rate for 1916, however, was ten times as great as that for the preceding year.

Of the 26 states in the registration area in 1916, the 5 showing the highest rates reported 75% of all the deaths from this cause. These states, with their rates, were New Jersey, 41; New York, 32.8; Connecticut, 19.2; Massachusetts, 12.5; and Maryland, 8.1. The next highest 5 rates appear for Pennsylvania, 7.8; Rhode Island, 7; New Hampshire, 5.6; Montana, 5.2; and Michigan, 4.9.

Accidents and Injuries.—The deaths resulting from accidents in 1916 numbered 60,071, corresponding to a rate of 83.9 per 100,000 population. This rate is considerably in excess of that for 1915 (76.3). The most marked increases appear for deaths due to railroad and to automobile accidents, and for those resulting from the effects of heat.

The rate for deaths from railroad accidents in 1916 (11.3) exceeds the corresponding rates for 1914 and 1915 (10.7 and 9.9, respectively), but, with these exceptions, is the lowest one recorded since 1906, the first year for which deaths from this cause were reported separately.

Deaths from automobile accidents and injuries in 1916 totaled 5193, or 7.3 per 100,000 population. As might be expected, in view of the enormous increase in the number of automobiles in use, the death rate due to these causes has advanced continuously since 1906—the first year for which they were reported separately—when it stood at 0.4 per 100,000 population.

Deaths resulting from street-car accidents in 1916 numbered 1775, or 2.5 per 100,000. This rate is the same as that for 1914, but shows an increase as compared with 1915. During the past 10 years, however, there has been a material falling off in the rate for this cause.

Machinery accidents caused 1624 deaths in 1916, or 2.3 per 100,000 population, this rate being somewhat greater than those for the preceding two years—1.9 for 1915 and 2 for 1914.

The number of deaths from mine accidents and injuries in the registration area in 1916 was 2119, corresponding to a rate of 3 per 100,000. The deaths from these accidents for the last three years show a material decline as compared with those for the preceding 10 years.

There were 2056 deaths in 1916 from the effects of heat, the rate being 2.9 per 100,000 population. This is the highest rate shown for this cause in the last 15 years, with the exception of that for 1911, which was 5.3.

Suicide.—The number of suicides reported for 1916 was 10,162, or 14.2 per 100,000. This rate is the lowest for the past 10 years.

Deaths Caused by Firearms.—The total number of deaths due to the use of firearms in the registration area in 1916 was 8240, corresponding to a rate of 11.5 per 100,000. Of these deaths, 3386 were suicidal, 3241 were homicidal, and 1613 were accidental. The suicidal use of firearms shows a decline as compared with 1915 and 1914; their homicidal use decreased as compared with 1914, but increased as compared with 1910, 1911, 1912, and 1915, and the rate was the same as for 1913; and the frequency of accidental deaths due to their use shows a slight decline during recent years."

THE FIRST SEMIANNUAL REPORT OF THE WAR COUNCIL OF THE AMERICAN RED CROSS.

On behalf of the War Council of the American Red Cross, appointed by President Wilson, May 10, Henry P. Davison, chairman, has made public the report to the American people on the present state of the War Fund and the work which is being done by the American Red Cross in this country and different parts of the world. The report, in part, is as follows:

"*To the American People:*

The Red Cross War Council herewith reports on the work of the Red Cross during the almost six months which have elapsed since its appointment by the President.

Included herein are details as to collections on account of the War Fund and appropriations made from the fund, up to November 1, 1917.

The growth of Red Cross activities among the suffering civilian populations in the different allied countries is, up to this time, the outstanding feature of Red Cross work in this war. The magnitude of the work in France is particularly impressive.

Broadly speaking, the Red Cross War Council has proceeded upon the theory that the present work of the American Red Cross should contribute to these great aims:

1. To be ready to care for our soldiers and sailors on duty wherever and whenever that care may be needed.
2. To shorten the war—by strengthening the morale of the allied peoples and their armies, by alleviating their sufferings in the period which must elapse until the American army can become fully effective abroad.
3. To lay foundations for an enduring peace —by extending a message of practical relief and sympathy to the civilian population among our Allies, carrying to them the expression of the finest side of the American character.

The American people have generously supported the work of the Red Cross, and this report of activity is given with great fullness in the hope that through it the public may realize both the obligation and the opportunity which the future presents.

The American Red Cross is attempting to respond to the most beseeching and far-reaching appeal ever made for mercy and relief.

The American people are today the richest people in the world, the richest in resources, richest in obligations and in opportunities. The Red Cross aims to mobilize the hearts and souls of America toward binding up the wounds of a bleeding world.

Up to date, approximately $88,000,000 in cash has been collected for the War Fund. The demands, however, in Europe, are increasing with great rapidity, and on the present basis of expenditure the $100,000,000 War Fund cannot last much beyond spring.

Following the preliminary report recently made on the work in Europe of the American Red Cross, the War Council presents herewith a summary of the work of the Red Cross, both in the United States and in Europe, from May 10, 1917, to November 1, 1917.

During this period the War Council appropriated from the War Fund (including $7,659,000 advanced to chapters for purchase of material and to be returned to the War Fund), $10,969,216.60 for work in the United States, as contrasted with the appropriation of $27,885,816.86 for work abroad, of which $20,601,240.47 was for use in France.

There have been appropriated from funds restricted to specific purposes, $1,417,625.74. As $7,659,000 advanced by the War Council is to be returned to the War Fund, the net appropriations amount to $32,613,659.20.

The total expenses of raising and collecting the War Fund are proving to be less than one per cent. The War Fund is deposited locally by the chapters and campaign committees. About 3500 banks now hold these deposits, in the name of William G. McAdoo, Treasurer.

Forty-nine Army base hospital units and five for the Navy have been recruited, organized and equipped by the Red Cross. More than twelve of the Army units and two of the Navy units have now been mustered into their respective Medical Corps and are seeing service. These units can care for a 500-bed hospital each, and some of them have been reinforced to enable them to take over larger hospitals.

The Red Cross has also organized 45 ambulance companies, with a total personnel of 5580, all of which have been taken into the Army Medical Corps, some for service abroad, others for the camps and cantonments. A General Hospital, for the use of the Navy, has been established at Philadelphia. Convalescent homes have been built at Fort Oglethorpe and Fort McPherson, Georgia, and mobile laboratory cars are to be provided for use in case of emergencies at the camps.

Through its Sanitary Service, the Red Cross is coöperating with local health authorities in maintaining the best possible sanitary conditions in the zone just outside military jurisdiction at the training camps and cantonments. Twenty sanitary units have been organized for this purpose.

The Red Cross has placed field directors of Camp Service at thirty-eight camps, cantonments and naval stations. The purpose of the Camp Service is to coöperate with all the agencies that are advancing the welfare of the enlisted men.

The Red Cross has continued its work of disaster relief during the war, and has rendered aid in 64 calamities. Recently a call for help for flood victims in Tien-tsin was answered by the dispatch of a relief expert to the city and the sending of $125,000.

Fourteen thousand Red Cross nurses have been enrolled for duty, and approximately 3000 have already been called into active nursing service, of whom 2000 are working abroad.

A program for increasing the reserve of fully trained nurses for war service has been adopted, in concert with the Committee on Nursing of the Council of National Defense and other nursing authorities.

Millions of women have been mobilized for work on surgical dressings, hospital garments, refugee clothing, knitting garments, and comfort kits. It is estimated that the value of their work during the next twelve months will amount to nearly $40,000,000.

Since April 1, 1917, the Red Cross has sent abroad 13,336 cases of surgical dressings, hospital supplies and clothing, containing approximately 13,000,000 separate articles. The Red Cross has promised to send 3,000,000 surgical dressings to France every month for the next six months.

Courses of instruction in elementary hygiene and home care of the sick, home dietetics, and first aid have been given throughout the United States. More than 34,000 women have completed the first of these courses, and 75,000 certificates of proficiency in first aid have been issued during the past year alone.

This work in the United States has been directed from National Headquarters by a completely reorganized administration. Under the direction of the War Council, a general manager, Harvey D. Gibson, president of the Liberty National Bank, has been given general charge of the work in this country. He has delegated the direct oversight of the chapters, of which there are now 3287, to division managers.

At National Headquarters in Washington a staff has been built up which included, on November 1, 1917, sixty-three officials, most of them business men and women of great experience in large affairs, who are working without payment of either salary or living expenses.

Numerous others are either giving their time or are working for nominal pay. The membership has grown, since the war, from about 200,000 to more than 5,000,000. The salary list has been reduced since last July from about 700 to about 425. Salaries have decreased also in average amount. Had the Red Cross been obliged to pay salaries to all the heads of departments at National Headquarters, the present organization would have been impossible.

A new class of members, the Junior Red Cross, has been created for school children, who are admitted by school units, to a share in Red Cross membership and relief work upon payment of a membership fee of twenty-five cents per pupil.

The direct appropriations from the War Fund for work in the United States are divided as follows:

Hospitals, etc	$503,500.00
Sanitary Service	184,500.00
Camp service, etc.	2,528,729.00
Miscellaneous	93,487.60
	$3,310,216.60

The work of the Red Cross in Europe centers necessarily in France, and Major Grayson M.-P. Murphy, a member of the War Council, is head of the Commission to France and Commissioner for Europe. Headquarters are in Paris, in a building furnished free for the current year for the use of the Red Cross. The working staff in France numbers 864 persons, of whom only 347 are paid by the Red Cross. The others are volunteers, or are paid by their former employers or from funds privately subscribed, so that the average cost to the Red Cross is only about $300 per year for each worker.

The principal purposes of the work of the American Red Cross abroad may be summarized thus:

1. To do everything possible to assist our Army and Navy in insuring the health and comfort of American soldiers and sailors abroad, and
2. To relieve suffering among the armies and destitution among the civilian populations among our Allies.

The establishment and maintenance in France of canteens, rest houses, recreation huts, and other means of supplying comforts in the armies of our Allies have been the means of heartening them and keeping their men in the field until our men could become fully effective.

The details which follow here are supplemental to those given in the report issued in September:

Work for the American Army is the first and most important part of the Red Cross program in France. More than twelve base hospitals organized by the Red Cross and now mustered into the Army Medical Corps, are in service in France. The Red Cross is also administering, under Army control, the hospital at Neuilly formerly known as the American Ambulance, together with Dr. Joseph A. Blake's hospital in Paris.

The Red Cross is serving 3423 military hospitals, both French and American, through the Hospital Supply Service, which operates sixteen warehouses and a motor transport system. Approximately 15,000 tons of material—hospital and general relief supplies—are distributed monthly from these warehouses. The Surgical Dressings Service reaches 2000 hospitals. American workshops in France will manufacture nitrous oxide, repair hospital apparatus, make splints and hospital appliances.

An appropriation of $100,000 has been made to enable the American doctors now in France to procure suitable buildings. Special laboratory equipment and animals for experimental purposes, for special military medical research work looking toward the recognition and study of diseases among soldiers, the eradication of lice, fleas and scabies, the treatment of trench nephritis, trench heart, war neurasthenia, exhaustion, lethal gases, shell concussion, wound infection, compound fractures, etc. The recommendation for this, like all others of a medical nature, was submitted to an advisory medical board composed of leading American doctors working with our own forces. They approved it.

The question has been raised as to whether the appropriation for medical research was not outside the proper scope of Red Cross activity. The answer is simple. The supreme aim of the Red Cross is to relieve human suffering growing out of the war. The Red Cross was advised from the ablest professional sources that an immediate appropriation for medical research would contribute toward that end. The War Council could not disregard such advice.

All recommendations to the Red Cross War Council of medical, surgical or hospital character are, before being made by the Commission to France, submitted to the advisory medical board in France, and they are also laid before the medical advisory board in this country by the War Council. It thus has at its disposal in these vital matters the most expert advice obtainable.

All expenditures under this appropriation must first have the recommendation of the chief medical officer of the American expeditionary force, Brig.-Gen. A. E. Bradley.

Relief of refugees throughout the devastated zone has been undertaken by the Red Cross. Relief warehouses have been placed at strategic points behind the lines, from which food, clothing, household goods, agricultural implements and tools are being distributed to the returning refugees. Foodstuffs to the value of $2,870,300 have already been bought in France or shipped there for military and civilian relief.

In good agricultural districts the Red Cross is coöperating with the French government and with American and English friends in assisting the population of ruined villages to begin repair of houses, etc.

At Evian, where French refugees, mostly women and children, who have been held prisoners behind the German lines, are returned to France, the Red Cross has provided motor ambulances for the transportation of the sick and feeble and has opened children's hospitals. Hundreds arrive there almost daily—destitute and sick.

Special work has been begun for mothers, infants and children. The Red Cross has sent three detachments of children's specialists to care for babies and expectant mothers, in the hope of checking the increase in infant mortality.

At two centers the Red Cross is caring for orphans and children from bombarded villages. A large refuge has been opened at one, at which sick and neglected children are being given expert medical care. From the other a travelling dispensary and shower bath is being sent out daily to make the rounds of the nearby villages.

Included in appropriations for France are the following:

Budget for military relief, including work for the American Army, hospitals, canteens, hospital supply service, surgical dressings service, casualty service, etc., to November 1, $2,411,225; budget for civilian relief, including refugee and reconstruction work, relief of mutilated soldiers, infant welfare, tuberculosis prevention, etc., to November 1, $2,460,467; budget for Department of Administration in Paris and Planning Department, to November 1, $119,590; additional appropriations, for hospitals, etc., $1,407,578.25; additional appropriations for transportation service, $1,423,598.90; other appropriations, $12,778,780.85.

In addition to the Commission to France, commissions were sent to investigate conditions and extend immediate relief in Russia, Roumania, Serbia and Italy. The Russian Commission has completed its survey, and some of its members have returned to the United States, leaving an operating organization in Petrograd.

The Italian Commission has also returned to the United States, and an operating commission is to be sent to Italy as quickly as possible.

The Commission to Italy used an appropriation of $200,000 for immediate relief in that country. The Red Cross acted promptly when the Italians were forced to retreat, pledging its aid through Ambassador Page and placing a special relief fund of $250,000 at its disposal. This was later raised to $750,000.

Commissions are at work in Roumania and Serbia. A commission and deputy commission have been assigned to England, and a special department has been set up for Belgium.

In Belgium the work of the Red Cross, which is confined to the part of the country still held by the Allies, is chiefly in coöperation with the relief interests of the King and Queen. The Red Cross is assisting Belgian hospitals and children's refugees, aiding Belgian villagers to re-establish themselves in the devasted zone left by the retreating Germans, and helping to care for Belgian children, both in Belgium and in France and Switzerland.

The work of the Red Cross in Russia centers on the medical and surgical needs of the army. Several shipments of drugs and hospital supplies have been made, and a unit of 125 motor ambulances has been sent to Russia. The Red Cross has shipped two million pounds of condensed milk for the use of mothers and children in the large cities.

The total appropriations (cents omitted), for the work outside of France up to November 1, are as follows:

For Belgium	$720,001
For England	1,066,520
*For Italy	214,000
For Russia	1,359,440
For Roumania	1,518,398
For Serbia	493,203
For Armenians and Syrians	1,800,000
Other appropriations	113,012
Total	$7,284,574

* Later the War Council appropriated $750,000 for emergency relief in Italy.

Week's Death Rate in Boston.—During the week ending Jan. 12, 1918, the number of deaths reported was 314, against 270 last year, with a rate of 20.87 against 18.23 last year. There were 48 deaths under one year of age, against 37 last year.

The number of cases of principal reportable diseases were: diphtheria, 85; scarlet fever, 39; measles, 124; whooping cough, 60; tuberculosis, 36.

Included in the above were the following cases of non-residents: diphtheria, 15; scarlet fever, 3; tuberculosis, 4.

Total deaths from these diseases were: diphtheria, 9; scarlet fever, 2; measles, 2; whooping cough, 3; typhoid fever, 1; tuberculosis, 21.

Included in the above were the following non-residents: diphtheria, 3; scarlet fever, 1; measles, 1; typhoid fever, 1; tuberculosis, 19.

Correspondence.

NAVY'S CALL FOR BINOCULARS, SPY-GLASSES AND TELESCOPES—"THE EYES OF THE NAVY."

Navy Department, Assistant Secretary's Office,
Washington, January 7, 1918.

Mr. Editor:—

The Navy is still in urgent need of binoculars, spy-glasses and telescopes. The use of the submarine has so changed naval warfare that more "*eyes*" are needed on every ship, in order that a constant and efficient lookout may be maintained. Sextants and chronometers are also urgently required.

Heretofore, the United States has been obliged to rely almost entirely upon foreign countries for its supply of such articles. These channels of supply are now closed, and, as no stock is on hand in this country to meet the present emergency, it has become necessary to appeal to the patriotism of private owners to furnish "*eyes for the navy.*"

Several weeks ago, an appeal was made through the daily press, resulting in the receipt of over 3000 glasses of various kinds, the great majority of which has proven satisfactory for naval use. *This number, however, is wholly insufficient, and the Navy needs many thousands more.*

May I, therefore, ask your coöperation with the Navy, to impress upon your subscribers, either editorially, pictorially or in display, by announcing, in addition to the above general statement, the following salient features in connection with the Navy's call:

All articles should be securely tagged, giving the name and address of the donor, and forwarded by mail or express to the Honorable Franklin D. Roosevelt, Assistant Secretary of the Navy, care of Naval Observatory, Washington, D. C., so that they may be acknowledged by him.

Articles not suitable for naval use will be returned to the sender. Those accepted will be keyed, so that the name and address of the donor will be permanently recorded at the Navy Department, and every effort will be made to return them, with added historic interest, at the termination of the war. It is, of course, impossible to guarantee them against damage or loss.

As the Government cannot, under the law, accept services or material without making some payment therefor, one dollar will be paid for each article accepted, which sum will constitute the rental price, or, in the event of loss, the purchase price, of such article.

Toward the end of January it is proposed to distribute throughout the country, posters making an appeal to fill this want of the Navy.

As this is a matter which depends entirely for its success upon publicity, I very much hope that you will feel inclined to help the Navy at this time by assisting in any way that lies within your power.

Very sincerely yours,
FRANKLIN D. ROOSEVELT,
Assistant Secretary of the Navy.

DOCTORS AND THE MEDICAL RESERVE CORPS.

Lowell, Mass, January 4, 1918.

Mr. Editor:—

In reading your editorial on "Every Doctor in the Medical Reserve Corps," in the January 3 issue of the JOURNAL, I agree with you that it would be an ideal condition, but difficult to attain because there are two sides to the question and perhaps my own case will illustrate the other side, and has been used against myself when I have tried to persuade eligible men to join the Corps.

I was commissioned a first lieutenant, June 5, 1917, and am still at home, since which date I have been in suspense, not knowing when I would be called. In July the lease of my office expired and, not caring to renew it at advanced rates for three years (which I would have done if not in the Corps), I was forced to move. I have lost considerable business through people assuming I had gone away and others not caring to engage me for future work, not knowing if I should be here when wanted.

It has been annoying, to say the least, and a number of men I have spoken to do not care to suffer this suspense and annoyance at this time, but would join if the Government would state definitely when they were wanted.

Now, I am not complaining or finding fault. I have simply done my duty as I saw it, my Bit and Best, and I ought to know something about the game of war and the duties of a good soldier, having started the study of military tactics about 25 years ago in high school, served in the Spanish-American War and later in the State Militia. If called tomorrow, I go; and if never called, am content, but I have to admit that it is disconcerting not to know where I may be two weeks hence, and my medical friends that have not learned discipline refuse to join under present conditions.

Yours truly,
CLARENCE B. LIVINGSTON.

SOCIETY NOTICES.

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at the Roxbury Masonic Temple, 171 Warren St., January 29, at 8.00 P.M. sharp. Phone Roxbury 22753.

Business.
Communication: "Cancer," John T. Bottomley, M.D.
Collation.

BRADFORD KENT, M.D., *Secretary.*
798 Blue Hill Ave., Dorchester.

NEW ENGLAND PEDIATRIC SOCIETY.—A meeting of the New England Pediatric Society will be held at the Boston Medical Library on Feb. 1, 1918, at 8.15 P.M. The following papers will be read:

1. President's Address, Charles Hunter Dunn, M.D., Boston.
2. Clinical Spasmophilia, William W. Howell, M.D., Boston.
3. Experimental Studies on Growth after Feeding Certain Ductless Glands, Warren R. Sisson, M.D., Boston.

Light refreshments will be served after the meeting.

CHARLES HUNTER DUNN, M.D., *President,*
RICHARD M. SMITH, M.D., *Secretary.*

GENERAL MEETING OF THE BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY.—Owing to the military duties of Dr. Taylor of Washington, D. C., he was unable to come to Boston on January 16, 1918, and the meeting arranged for that date was therefore postponed.

W. B. ROBBINS, M.D.

NOTICE.

BOSTON MEDICAL LIBRARY.—In view of the serious coal situation now existing in New England, and to conform to the recommendations of the Fuel Administrator dated Jan. 9, 1918, the library hours will be as follows until further notice:

Open daily except Monday, Sunday and Holidays. 9.30 A.M. to 5 P.M.

Closed all day Monday. Closed evenings.

January 14, 1918. WALTER L. BURRAGE, *Secretary.*

RECENT DEATHS.

DR. THOMAS D. CROTHERS of Hartford, Conn., died on January 13. He was born in New York in 1842. Since 1875 he had been secretary of the Association for the Study and Care of Inebriates, and he was also editor of *The Journal of Inebriety.* In 1900 he was made professor of nervous diseases by the New York Medical School. He was also dean of the College of Physicians and Surgeons of Boston.

The Boston Medical and Surgical Journal

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Original Articles

MENTAL CONDITIONS DISQUALIFYING FOR MILITARY SERVICE.

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In addition to cases of insanity and mental deficiency, all armies have to deal with considerable numbers of soldiers with hysteria and neurasthenia. The prevalence of these disorders increases greatly during war and at times of large mobilization.

In a recent letter from W. Maule Smith, M.D., Medical Superintendent of the West Bromwich Infirmary in England, he informs me that in Great Britain the British have four base hospitals for mental and nervous cases, *viz.,* two in England, one in Scotland and one in Ireland. The Canadians have one and the Australians have three such hospitals in Great Britain. All patients suffering from nervous and mental conditions are returned from France and are then drafted to these base hospitals, where they are reassorted and sent to smaller hospitals which are reserved for them. Cases which are still in the Army are sent to these base hospitals direct. If discharged from the Army while suffering from mental disease, they are sent to the county hospitals, but are paid for by the Government. "Most of these men that I have seen," he says, "are suffering from special sense derangement, taking the form of hallucinations of hearing and sight, also aphasia—or rather aphonia—lasting for a considerable time; amnesia and disorientation from the date of the casualty. The rule is that no case of mental disease resulting from fighting is certified in the ordinary way as insane."

From a still more recent letter from John Macpherson, M.D., Lieut.-Col. and President of the Medical Board, I quote the following: "Until recently all mental and nervous cases invalided from the expeditionary forces had been sent from France and other centers to this country (England). Recently, with regard to France, arrangements have been made for treating certain of the milder neurasthenics at base hospitals in that country. Cases occurring in Mesopotamia and Egypt can only be gradually transferred home after passing through base hospitals there and through hospitals in Malta, finding their way sooner or later to England. There are approximately 2700 beds in England, chiefly in asylums which have been converted into military hospitals. During their stay the patients in these hospitals are not certified. We are under promise to the country through the House of Commons to retain all overseas mental cases which are certifiable except, (1) general paralytics, (2) those with previous asylum history, and (3) bad epileptics. This applies only to those who have been with the overseas force.

"With regard to neurasthenics proper," Dr. Macpherson continues, "it is difficult to estimate the exact numbers. They are, as a rule, housed in special military hospitals, under special medical care. These hospitals have been converted specially for these cases. As the number of casualties increases and the number of men serving the colors also increases, there is a gradual increase in the number of neurasthenics; and, in proportion to the severity of the fighting and the increase in the use of high explosives, the number of neurasthenics and shell-shock cases varies. They include the following classes: (1) shell-shock, (2) neurasthenics, (3) functional paralysis, (4) tachycardia, (5) epilepsies, traumatic and idiopathic, with a sprinkling of hysterias and various other nervous disorders.

"If you estimate that, of all beds for military purposes provided in this country, five per cent. are allocated to mental and nervous cases, you will, I think, have a fair estimate of what you will have to provide."

The report of conditions at Halifax for August, 1917, shows that for each unit of 500 returned soldiers, 30 are tubercular, 25 nerve and mental, 70 amputations. On arriving at the Halifax discharge depot, hospital trains are in readiness for the unloading, and the mental cases, each with an attendant, are unloaded first and are sent to the insane hospitals at Coburg, Ottawa, Col. Alfred Thompson in charge.

Up to January, 1917, there have been approximately 300,000 troops sent overseas from Canada, of which 175,000 have seen service at the front. Of these there have been reported among the Canadian troops in England 4,316 casualties under the grouping of nervous and mental diseases, that is about 15 per thousand. It has cost Canada about $2000 per man to send her troops to the continent and return. It is easy to see what a mistake it is not to eliminate these mental and nervous soldiers, as far as possible, before sending the men overseas; as 13 per thousand of these men never got to the firing line. The nervous and mental casualties of Canadian officers and men were 2.38% of a total of 180,496 casualties of all kinds, including deaths, wounds in action and general diseases requiring admission to the hospital. They were made up irrespective of any question of discharge or permanent disability, such questions being determined at Quebec. Over 11,000 cases have been returned to Quebec and they are now coming in at the rate of 2,000 per month. From 4,000 general diagnoses of returned soldiers, made by the Medical Board at the Quebec discharge depot, a group classification is as follows:

Gunshot wounds, all kinds	25%
Nervous and mental diseases	12%
General medical diseases	12%
Tuberculosis	7%
Other cases	44%
Total	100%

Thus, in more or less permanently disabled soldiers, nervous and mental diseases divide second place with general medical diseases, and outrank, as they do in our Army, tuberculosis.

"The indetermination of the term 'shell-shock' has contributed to the confusion so common in military statistics on that subject. There seems now to be a strong temptation to designate as 'shell-shock' every medical case with nervous symptoms where the patient has been in the neighborhood of exploding shells. The tendency is to classify such disorders according to the apparent cause, without due consideration of the symptoms, course or, in many cases, the motive. A true concussion effect upon the nervous system, with organic changes, doubtless exists, and sets up symptoms similar to those of Oppenheim's grave traumatic neurosis. Surgeon-General Frothingham, who has been much in France, says that such cases are very rare. Most of the cases now denominated as 'shell-shock' present no features with which neurologists were not fully familiar under the terms 'hysteria' and 'neurasthenia,' and they carry with them the tendency to exaggeration and shamming so common in those neuroses. Near the firing line, the diagnosis of 'shell-shock' is made only when physical evidences of injury are also present or when the soldier's own statement as to what happened to him is fully corroborated.

"It is evident from the case records of returned Canadian soldiers that this new term is also made to cover various mental diseases, notably dementia-praecox, which existed before enlistment, and would have developed in due course without reference to military service."

On Aug. 1, 1917, the War Department issued, from the office of the Surgeon-General, Circular No. 22, which is, in part, as follows: "For the safety, efficiency and economy of the military service, it is highly essential that nervous and mental diseases be recognized at the earliest possible moment. Nervous and mental diseases may, and frequently do, exist in persons who are strong, active and apparently healthy, and who make no complaints of disability. Such persons are, however, less than useless as soldiers, for they cannot be relied on by their commanders, break down under strain, become an incumbrance to the Army and an expense to the Government. Disorders of this character are often demonstrable only as the result of a special and painstaking examination directed toward the mind and nervous system. This circular is published for the special purpose of calling the attention of medical officers to the particular diseases most frequently overlooked on general examination, and the symptoms most important to their diagnosis; and to certain characteristics in personality and in behavior, which might raise the question of mental disease.

Queerness, peculiarities and idiosyncrasies, while not inconsistent with sanity, may be the beginnings or surface workings of mental disease. A soldier is too important a unit for variations from a standard of absolute normality not to be looked into before the recruit who presents them is acceptable for service. To aid the neurologist and psychiatrist in these ways, the camp surgeon shall direct all medical officers, dental surgeons, instructors, hospital sergeants, barrack sergeants, and others who come in close contact with recruits, to refer to him or the camp surgeon all recruits who persistently show any of the following characteristics: Irritability, seclusiveness, sulkiness, depression, shyness, timidity, over-boisterousness, suspicion, sleeplessness, dullness, stupidity, personal uncleanliness, resentfulness to discipline, inability to be disciplined, sleep walking, nocturnal incontinence of urine, and any of the various characteristics which gain for him the name of 'boob,' 'crank,' 'goat,' 'queer stick,' and the like.''

In detailing psychiatrists and neurologists to special duty with the armies, the Surgeon-General has had in mind (1) the proper care of soldiers who become incapacitated through mental and nervous disease, (2) the special examination of recruits in the training camps, in order that those who, because of neuropathic or psychopathic conditions, are unfit for military duty, may be identified and discharged from service.

Until the troops move abroad, the chief and most important responsibility of the military psychiatrists and neurologists will be the special examination of recruits. It is obvious that no man should be eliminated from the service who is fit to render a valuable service in this emergency. On the other hand, it is quite apparent that individuals suffering from certain forms of nervous and mental diseases should not be permitted to enter into service, as experience with the American armies has shown quite conclusively that such individuals are not capable of military service even in time of peace, and experience in the European armies has shown beyond question that such individuals are not able to withstand the rigors of modern warfare. At critical times they go to pieces, with the result that the military force is weakened, is hampered in the free performance of its function, and the Government is likely to be burdened after the war with the care of a large number of invalids.

It is important that the potential as well as the actual conditions of the recruits be kept in mind. It must be remembered that we have a perfectly definite situation to meet,—which is the elimination of men who, because of nervous or mental instability, are unfit for military service. Experience in the armies abroad shows quite conclusively that mental defect, *per se*, is often not sufficient cause for the rejection of a recruit. A previous history of insanity, epilepsy, chronic alcoholism, or spinal or cerebrospinal syphilis in any form, or a marked history of nervous instability, or difficulty of environmental adjustment over a long period, should be sufficient cause for rejection.

The duties of the pschiatrists and neurologists at the cantonments are two-fold:

1. Service at the base hospital, under the commanding officer of the hospital, for the care of nervous and mental cases, and for the examination of all cases referred for special examination by commanding officers, regimental surgeons, or others.

2. Service under the Division Surgeon, for the purpose of making general surveys of troops during group examinations or during small formations, and at other times, and selecting cases for special examinations, which give evidence of mental or nervous instability.

Co-ordination and quickness of perception must be gone into the examination of recruits when it is realized what the conditions are to which we are sending these men. For instance, when the enemy use many of the poisonous gases which have been creating such havoc among our troops, they must be capable of quick and intelligent action. Thirty per cent. of all bombs now used by the Germans and Allies are gas bombs. These include the paralyzing gases, that is, prussic acid, which is poisonous in one part to 10,000; and the lachrymating gases, ethyl-chloride, for example, which puts the soldier out of business when diluted 1 to 1,000,000. Then there are the cloud gases, such as chlorine or gas known as phostagen, which is a combination of chlorine and carbon monoxide. Two or three breaths of this gas bring on a chronic pneumonia which usually results in death in three to four days. The enemy bring this gas to the front in liquid form, confined in drums through which pipes are led toward the foe. When the wind is in the right direction the air is let into these drums, which vaporizes the contents, and the gas, being heavier than air, rolls over the surface of the earth and into the trenches and dugouts, in the form of a cloud, visible by day, but invisible at night. Gas masks, with the neutralyzing chemicals attached thereto, render all the 12 or 13 gases used by the enemy harmless, but these masks have to be put on within six seconds from the moment the signal is sounded, else the damage is done and the soldier's death is only a matter of time; or if he has not breathed enough gas eventually to cause his death, he is rendered useless for further service—in other words, a man once gassed is considered fit only for civil life and is often not much good for that.

Quick action is again necessary in the handling of the hand-grenade. Holding one of these bombs in the right hand, the soldier has to remove a plug or cap, which automatically lights the fuse. If this bomb does not leave his hand and get away towards the enemy in four and one half seconds, he and his companions, or those near him, are blown to pieces. Once again: when the Allies are preparing for a charge or going over the top, a barrage of fire from the heavy artillery precedes their advance; the soldier has to be intelligent enough to time that barrage, and the barrages following it, so as to keep between them and not get into them.

Our examination of recruits at Camp Devens, which include the referred cases from over 30,000 men, have brought out the fact that the general practitioner has not been able to pick out many men whose mental condition disqualified them for service or who were mentally defective.

The Neuro-Psychiatric Unit at Ayer is composed of the following staff: Major L. Vernon Briggs, Capt. Morgan B. Hodgkins, and Capt. Douglas A. Thom. Two wards are nearly completed for this unit, and apparatus for hydrotherapy and electrotherapy installed; and a full corps of nurses and attendants and specialists in hydrotherapy and electrotherapy will soon be actively engaged in the care of neurological and psychiatrical cases referred from the Base Hospital of 1000 beds and from the infirmaries of the several regiments. In the meantime we are examining the recruits referred to us. It has been interesting to observe several well-defined cases of general paralysis coming out in the third decade.

When we started our neuro-psychiatric examinations we thought that neurology had but a small part to play in our service, but at the present time it occupies not less than 30 per cent. of all our cases. We find many cases of residual infantile paralysis, neuro-syphilis and epilepsy who have been holding responsible positions; and a large group of epileptics whose convulsions have not been of sufficient severity or frequency to keep them away from work, but which would render them unfit as soldiers.

We have also found many imbeciles who should be committed. Among the chronic alcoholics it has been interesting to note the frequency of convulsions; many cases who have had convulsions have not had delirium tremens, and some who have had delirium tremens have not had convulsions. We have been rather surprised not to find more malingerers, there being but comparatively few among cases referred to our clinic.

The method of examination of troops, be they referred or not, is neuro-psychiatric and covers seventeen questions, which take about six to ten minutes to go over. If these questions bring out abnormal conditions, a further examination is gone into. The seventeen questions are as follows:

1. Name.
2. Age.
3. Civil State.
4. Birthplace. (If of alien birth, length of time in States.)
5. Character and extent of education.
6. Nature of former occupations, and length of service in each. (b) Reasons for abandoning any given occupation.
7. Reasons for entering service.
8. Date of mustering in.
9. Attitude toward duties.
10. Attitude toward fellows.
11. Penalization for misdemeanors.
12. Consumption of alcohol.
13. Venereal infection.
14. Sleep (dreams).
15. Appetite.
16. Digestion.
17. Emotional tone.

This is always followed by a brief neurological examination whereby the tendon reflexes are tested in the usual manner, pupils examined for the accommodation to light and distance, the tongue, facial muscles and fingers tested for tremors. Station, gait, co-ordination, are all tested in the usual way. If any of these tests indicate that a further examination is necessary, it is, of course, followed up to determine the diagnosis.

Soldiers who have had this examination at Camp Devens to date have been specially referred to the Neuro-Psychiatric Clinic by regimental surgeons, regimental officers, headquarters division, and include disciplinary cases and cases from different services at the Base Hospital. To date these number over 500 cases, of which 372, or 75%, have been rejected as unfit for military service.

The rejected cases fall within one of the following groups: feeble-minded, epileptic, and the constitutional and psychopathic states. Two or more of these groups may be associated in the same case, that is, the epileptic may be primarily feeble-minded, and may eventually develop psychotic symptoms.

The four groups may be further divided as shown by the charts, which represent the work of this unit up to November 7. This represents over 1% of the entire 76th Division, and includes officers as well as enlisted men. It is fair to say that over 70% of the rejected cases might have been missed in a general physical examination, as given by the exemption board, but it is needless to say that such diseases as chorea, neuro-syphilis, hemiplegia and paraplegias and palsies should have been easily recognized and exempted.

About 50% of all the cases rejected, in the opinion of the members of the Neuro-Psychiatric Clinic, would be benefited by institutional treatment and care. It is obvious that these cases should be followed up, and endeavor made to institute proper treatment and care.

In closing I would like briefly to mention six cases which appear to us of unusual interest or of social significance.

CASE 1. P. M. J., age 27 years, born in Plymouth, Mass. Student at Amherst Agricultural College. At the age of 11 was a student of nature and spent much time in the woods, observing the habits of animals. Acknowledged that he had gonorrhea, but denies syphilis. Referred to our clinic by the Company Commander, on account of statements made in the presence of officers, especially in regard to an invention which would revolutionize the running of automobiles. At our examination he stated that he could furnish the U. S. Army with meat at four cents a pound; that he had a million dollars which he could put his hand on tomorrow, which he could use as capital. He later confided to one of us that the million, and as much more money as he wanted, was in South America, waiting for him; that some woman was going to give it to him because of his invention regarding ice, which idea she had put into execution and made millions of dollars. He stated that he had interviewed hundreds of soldiers at Camp Devens and ten officers; also, the same number of soldiers and officers in England; that he added together their opinions as to war, struck an average, got the percentages, and had thereafter dismissed the whole question from his mind. He made other extraordinary statements and was somewhat threatening in his attitude when expressing his impatience at the officers for not giving him a hearing, and said that the hospital authorities were keeping him in the wards when he had so much important business to attend to. The Wassermann showed four-plus reaction. His case was diagnosed as general paralysis, and sent to the Psychopathic Hospital in Boston.

Case 2. H. N. B., 22 years of age, appeared complaining of severe tonic spasms in both the upper and lower extremities. These spasms were more severe when muscles were at rest, and passed off after passive movements had been exercised on the arms and extremities, so that after patient had used either arms or legs for any time he had little difficulty and no pain until they were put to rest. Neurological examination presented nothing worthy of note excepting a marked exaggeration of the deep tendon reflexes. Family history negative, with the exception that the patient claimed that mother and brother suffered from the same trouble. Diagnosis: congenital myotonia (Thomsen's disease). Although this case hardly falls within the realm of either mental or nervous diseases, it appeared to be of sufficient interest to justify reporting, inasmuch as the literature up to the present time reports only about 30 similar cases.

Case 3. W. F. M., 301st Infantry, born Feb. 9, 1899; went as far as the 8th grade in school, but at 14 was dropped on account of truancy. Has a brother in Bridgewater State Hospital for the Criminal Insane; has been arrested once for drunkenness in Dedham, twice in Boston, three times in Roxbury. Was seven years employed in a shoe factory, and was drafted to Ayer from his residence in Boston, Oct. 10. On the following Sunday at 2.30 p.m., he walked out of Camp and all the way to Boston, via Lowell and Arlington. He said that the men at Camp were framing him up and injecting electricity into him, especially into his legs. After one week at home, he told the brother of the U. S. District Attorney about the electricity, and how they tried to "get him" at Ayer with electricity. He was advised to see the District Attorney, who had him arrested, and he was sent to Fort Banks as a prisoner for desertion. I was ordered to Fort Banks to examine him, and found him somewhat demented, with hallucinations of hearing. He said that his thoughts came back to him by voices which he heard. He now believes that people are calling him names, especially "superstitious fairy." The voices also swear at him, and tell him the Federal authorities are trying to frame him up. He acknowledged being at one time in a Psychopathic Hospital, and inquiry at the Psychopathic Department of the Boston State Hospital reveals the fact that he has twice been an inmate of that hospital, and that his last discharge was under date of Sept. 20, 1917. Diagnosis: dementia precox, paranoid form; rejection recommended.

Case 4. F. E. D., single, age 24; born and resides in East Hartford, Conn. Went to 8th grade in school; says he went "crazy" over one George Cohen, an actor; although he hunted for him he never found him. Claims he was doped and laid up in New Haven, and that when he tried to get away they knocked his head on a cement floor. Gives history of residence at the Connecticut Hospital for the Insane, Middletown, Conn. Patient demented and somewhat excited. Was discharged by our recommendation, after diagnosis as dementia precox. After being paid off and his ticket bought he was left at the station, although we had recommended that he be attended to his home in Connecticut. He did not take the train, but returned to the hospital, and demanded that he be sent to the trenches to fight. On account of creating some disturbance, he was arrested and placed in charge of the Provost Marshal in the civilian jail in the camp. Here, at supper time, he drew a knife across his throat, and on this account, and on account of a newspaper reporter getting hold of certain facts regarding the case from the jail authorities, to save further publicity and to care better for the man, he was returned to the Base Hospital, and later sent to the Psychopathic Hospital in Boston in an ambulance.

In reply to an inquiry directed to the Connecticut Hospital for the Insane, Dr. Floyd Haviland, the Superintendent, wrote as follows: "F. E. D. was in our Hospital from Oct. 22, 1912, to April 15, 1913, being on the latter date discharged into the custody of his father as improved. At the time of his admission he was 19 years old. The onset of the psychosis was said to have been five weeks previous to the date of admission. He was first taken to the Hartford Retreat, where he remained until Oct. 18, 1912. According to the committing physicians, he imagined that he was a great athlete and made application to Yale College for the appointment as Assistant Doctor of Athletics. He took off his clothes in New Haven and tried to do various athletic feats on the street; was violent and smashed furniture in his room. The day after admission he was found lying in a nude condition on the floor, with all muscles tense, his extremities extended in a peculiar manner. When spoken to, he sprang up and moved about. He seemed to be dazed, and questions had to be repeated in a loud tone before he would reply. He stated that he had been doped by "George Cohen" and others. Sometimes he would stop in the middle of a speech, and look fixedly at some spot as if he heard someone. A few days later he was up and dressed, and spent much of his time standing in one place, drumming on the door and repeating senseless words or syllables. At night he usually covered his head with the bed-clothing. Physically, there was a positive Wassermann of the blood serum, there was slight inequality of pupils, knee jerks were absent, and there was considerable tremor of eyelids and protruded tongue. According to the records he was diagnosed dementia precox, catatonic form, with a possibility of dementia paralytica to be considered. According to the records he became more composed and for some time before his discharge he assisted in the work on the farm."

CASE 5. W. H. P.; arrested while intoxicated, for insulting an officer; three empty Jamaica ginger and one vanilla extract bottles found on him. He stated that he was released from Salem Jail, on condition that he report to the exemption board and accept service in the National Army. He says that he was arrested on July 18, 1917, and sentenced to three months in the Salem Jail; sentence suspended. Arrested again for similar offense about Aug. 12; received a three months' suspended sentence in the House of Correction, Salem. Was serving this sentence when his father received a pink card requesting him to report to the exemption board, Salem, Sept. 18. He said he was pardoned by the County Commissioners on the morning of Sept. 18, and sent to the office of the local board in Masonic Temple, where he said he was told by the chairman to report again on the 23rd, or else he would be sent to jail; this he did. He has been intoxicated twice since coming into camp. He began drinking at 16 years of age; the last six months has drunk about one quart of whiskey a day. Thinks he has been arrested at least fifty times for drunkenness and once for larceny of crackers from Boston and Maine freight car; has served two jail sentences for drunkenness in Salem, has been sentenced three times to Bridgewater State Farm and three times to Concord Reformatory. Was released from Concord in 1914 for one year, on condition that he go to the Norfolk State Hospital, which he did on Sept. 21, 1915, and was released Nov. 7, 1915.

CASE 6. F. S. Referred by Company Commander. Patient came under armed guard, having attempted to run away several times. Has on him the following paper, which he claims to have presented to the exemption board:

"Bangor State Hospital, Bangor, Maine,
August 19, 1917.

"This is to certify that F. S. (correct name —— ——) has been a patient in this hospital from Feb. 17, 1914, to May 18, 1917. On admission he was 23 years of age; born in Russia; length of residence in United States unknown. During his residence in the hospital he was depressed, agitated, suspicious and suffering from hallucinations and delusions. During the last three months he improved and was allowed to leave the hospital on a six months' parole. Clinical diagnosis: dementia precox, catatonic type.

L. F. NORRIS, *Acting Superintendent.*"

This case was rejected.

We have also referred to our clinic the so-called "conscientious objectors." These may be divided into four groups: (1) the objector who is really *conscientious,* who objects to taking life or entering into combative service, but who is willing to take up any other branch of service, including that of stretcher-bearer from the first-line trenches; (2) the *religious objectors,* including those calling themselves "Pentecostals," members of the Society of Friends (Quakers), Seventh Day Adventists and members of the International Bible Students' Association. Some of these religious objectors are willing to enter into the service as noncombatants; others refuse to become any part of the military service. (3) The *Christadelphians,* who have now become exempted in England, providing they agree to engage in work of national importance, such as farming, factory work, etc. These men refuse to don military clothes or to salute an officer or do any military service, even service in military hospitals, and declare they would none of them raise a hand to save a soldier if he was dying and such an act would save him, because the soldier is part of the military system; (4) The *objector who is deluded,* whose abnormal mind has been swayed by stronger normal minds, and who is mentally diseased or defective, and must be promptly rejected.

Following is the classification of those rejected to November 1, 1917, but does not include some 30 whose papers have not been signed, pending the obtaining of histories or further observations in the Base Hospital:

1. Defective mental development	164
2. Epilepsy	92
3. Chronic alcoholism	27
4. Dementia precox	12
5. Constitutional psychopathic states	17
6. Neurasthenia	9
7. Chorea	5
8. Manic-depressive insanity	7
9. Hysteria	4
10. Cerebrospinal syphilis	3
11. Tabes	2
12. General paralysis	2
13. Drugs (morphine 6, heroin 1)	7
14. Toxic psychosis	1
15. Traumatic psychosis	1
16. Hemiplegia	2
17. Paraplegia	1
18. Contracture	1
19. Migraine	2
20. Congenital myotonia (Thomsen's disease)	1
21. Enuresis (exaggerated)	2
22. Psychasthenia	10
	372

These rejections were made from a total of 1324 officers and 27,482 men, the military strength of the cantonment to November 1. The total rejections to date for all causes have been 1 in every 8 of the draft sent to Ayer.

The figures I have given show only a cross-section, as it were, of our work resulting in the elimination of the mentally and nervously unfit, for our work is far from finished. At the present time we are having referred to us about 15 cases a day, and our percentage of rejections is greater as time goes on, because of the more intimate knowledge of the hospital staff and regimental surgeons of the kind of cases which should be referred.

VAGINAL DISCHARGE IN CHILDREN; STUDY OF 255 SELECTED CASES, WITH SPECIAL REFERENCE TO THE QUESTION OF THE DIAGNOSTIC AND SPECIFIC VALUE OF SMEAR EXAMINATIONS.*

By I. C. Rubin, M.D., F.A.C.S., New York City.

[From the Special Clinic for Vaginitis in Children, Mt. Sinai Hospital Dispensary.]

The problem of vaginitis in children presents nearly as many difficulties today as before the gonococcus was discovered. Before the etiological cause of gonorrhea was established, vulvovaginitis of children was supposed to be due to a variety of causes, all of a non-specific nature. Soon after Neisser's discovery, the notion that vaginal discharge in small children was also venereal in origin became predominant. No longer was this to be treated lightly. An active local therapy was to replace the almost *nolle me tangere,* and both pediatrist and gynecologists recommended measures which had been found useful in the treatment of gonorrhea in adults.

In view of the general prevalence of gonorrhea, the incidence of gonorrheal vaginitis in infants and children was assumed to be proportionately great. In consequence numerous attempts were made by all persons interested in child welfare to study the question. The American Pediatric Society through its special committee on vaginitis has recently published its report upon a very extensive investigation on the subject.[1] The resolutions embodied in that report contain the most approved recommendations for sanitary and hygienic measures to be adopted both for the prophylaxis and the actual management of the disease. Without a single exception these excellent rules may be profitably adopted in all communities, since they are helpful not only in the matter of vaginitis but also in the general prevention of the infectious diseases of childhood.

In this connection it may be well to mention that these recommendations had been practically anticipated *en masse* during the progress of our work at the Mt. Sinai Hospital Dispensary. With the efficient aid of the two nurses of the Social Service of the hospital, Mrs. Carrie C. Gibson and Miss Helen J. Moses, it was possible to carry out the follow-up system in the vast majority of our cases. Our work was further encouraged and stimulated by Dr. S. S. Goldwater, Director of Mount Sinai Hospital. His interest in the problem was all the keener since it became a matter of municipal importance to the Health Department. In one of his publications on the subject[2] he stated that "a form of vaginitis, which is bacteriologically indistinguishable from gonorrheal vaginitis, is a common condition among children in this city and elsewhere, and that this is well known to clinicians." Further, "that as far as he was aware the problem had not as yet been solved anywhere," and as Commissioner of Health, "can only promise on behalf of the Department, unremitting attention to it, in the hope that a working program may ultimately be formulated." Still further, to quote the Health Commissioner, "as the condition in question is one which, notwithstanding the most intensive treatment, often persists for months and even years, it would be necessary to inaugurate a method whereby the education of excluded children could be continued. The only logical method would be to send private teachers into homes of infected children."

The importance to the municipality from a social, economic, and educational standpoint can, therefore, scarcely be exaggerated if it can actually be established that vaginal discharge in children of school age and under is gonorrheal. The general consensus of medical opinion, according to Trist and Kolmer,[3] favors the gonococcus origin of the vast majority of cases of vulvo-vaginitis in children. Upon this assumption are based all rules for prevention, control and cure of the disease as applying to homes, hospitals and communities. Most observers have accepted this opinion as an established and indisputable fact, and upon that premise have also conducted their medical treatment. My observation of this class of cases during the past six years has led me to a conclusion contrary to that which is generally held concerning the nature of this affection in children.

The purpose of the present paper is to detail my experiences with vaginitis in children studied and treated in a special class at the Mt. Sinai Hospital Dispensary for a period of four and a half years. In this special class, which was established in June, 1912, we had an opportunity to study the clinical manifestations and varieties of vaginitis in infants and children. I shall not enter into the details of the institutional administration or the technic of the treatment of the children in this dispensary class, but rather I shall call attention to certain phases of the problem which are of fundamental importance. Two points will receive special attention, since upon their solution depend all the rest:

1—*The incidence and prevalence of gonorrheal vaginitis in children.*

2—*The value of smear examinations in the diagnosis of gonorrheal vaginitis in children.*

Since the class for vaginitis in children was established, altogether 255 cases have been observed. Of this number, 50 were treated by Dr. Barnett during the first year. His conclusions were published in September, 1913.[4] In his paper, and in fact in all recent publications on vulvo-vaginitis in children, the gonorrheal nature of the disease has been taken more or less for granted. I was under the same impression when I undertook an investigation into the cause of the persistence of gonorrheal vulvovaginitis in children.[5]

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* The present paper was originally submitted as a brief report on the progress of this work to Dr. S. S. Goldwater, Health Commissioner, New York City, 1914-1915, and Director of Mount Sinai Hospital.

By means of the electric lighted speculum we were able to study the appearance of the vaginal portion of the cervix uteri, the entire vagina, and also to note the distribution and amount of the discharge. In all these cases we had supposed the diagnosis of gonorrhea to be definitely established.

When I took up the work at the clinic I found that the diagnosis of gonorrhea was made by smear examination. Upon a positive report for "G." in any given case with some vaginal discharge, the little patient was at once subjected to treatment which was deemed most satisfactory in our experience. When, however, smear examinations for gonococcus proved positive in a number of apparently normal children who exhibited the slightest vaginal secretion, it became obvious that some other method than smear examination was necessary to establish the presence of gonorrheal infection. In the absence of special cultural methods for differential diagnosis or more elaborate bacteriological facilities, I was obliged to guide the treatment of these cases of so-called gonorrheal vaginitis in children according to the reports of frequent smear examinations. As the vast majority of the little patients attended the clinic regularly I was able to compare the progress and character of the vaginal discharge with the bacteriological report of the slide examination. In one case more than 50 smear examinations were made. This case alone would suffice, if no others were available, to show how little dependence can be attached even to Gram-staining of the smears. This case will be referred to again.

Of the 255 cases to date, I have taken the first 100 consecutive cases for analysis. The anamnesic data were both scanty and defective. It was soon seen that they could not be grouped or utilized for statistical purposes. My chief object in collecting the data, scattered as they may seem, was to determine, if possible: 1. The prevalence of gonorrhea among little children. 2. The meaning of vaginal discharge as such. 3. The diagnostic value of smear examination. 4. The relation between treatment, discharge, and a positive or negative report of gonorrhea. 5. What is essential in the establishment of a positive diagnosis. 6. Contagiousness.

The majority of the patients were referred to the vaginitis class by the chiefs of the children's clinics in the dispensary. Only a few were brought by parents directly to the vaginitis class. It is remarkable that in four years only 255 cases were treated in the special class. During these four years approximately 50,000 children were seen in the children's classes at the dispensary. The percentage of children referred by the physicians and nurses to the vaginitis class for the treatment of the "V. D." (venereal disease) was 1 in 200 cases. This percentage seems small in comparison with the incidence of this condition as estimated by other writers. On inquiry I learned that the "V. D." is not especially sought for during the physical examination but usually the mother calls attention to it, whereupon smears are taken. The parents, however, attach no special importance to the discharge unless it is profuse, and avoid having the children treated because of their fear of injury to the hymen.

While all cases referred to the vaginitis class were supposed to have had a positive smear examination before they were sent to us for treatment, a few were referred without such preliminary examination. In every instance we sent smears of new cases for examination. It is interesting to note that out of the first 100 consecutive cases, 29 smears were returned negative, 60 smears positive, and 11 were undetermined.

The cases with positive first smears on subsequent examinations were *reported negative* for one, two, three or more times consecutively or alternately. The cases with *negative first smears in 5 instances proved positive after one to six months of observation.*

A great many of the positive first smears presented only a slight amount of discharge, in some instances no greater than would be anticipated in the normal female child. A few of the cases with negative first smears showed, however, a rather profuse discharge which would justify the suspicion of gonorrheal infection.

Of the 100 cases only 21 showed abundant discharge. In 7 the discharge was sero-granular; in 5 the discharge was moderately purulent; in 9 the discharge was profusely purulent.*

All the rest of the cases showed for the most part red streaks at the vulva, folliculitis, eczema of vulva, merely moisture or a slight amount of sero-granular discharge without inflammatory changes evident in the vagina. In a number of instances there was a similar secretion within the vagina without, however, acute changes or evidences of chronic changes in the vaginal mucosa. Where there was purulent discharge it was also found abundantly within the vagina, and in a few instances the mucosa was angry looking and swollen and bled easily. The majority of these cases had never before been treated for the vaginal discharge. This fact must always be taken into account because treatments of various kinds undoubtedly induce certain changes in themselves. These changes are either of traumatic origin or are due to secondary infections. The cases which formed the basis of our previous study had all been subjected to prolonged treatment before we examined them.

The reports of smear examinations was out of all logical relation to the clinical status of the case, the amount of discharge, the duration of the discharge, and especially, to subsequent examination. We found, too, that *frequently without* any treatment a second report was returned negative, a third positive, and then irregularly positive and negative; while, after active treatment, a negative case would be reported positive, and then irregularly positive or negative.

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* Purulent in the clinical sense. In our reports it was not stated whether pus cells were abundant or not.

I have attempted to tabulate the cases with reference to the relation between the laboratory reports of smear examination, the amount and character of the discharge and the different methods of treatment. Altogether there were six hundred and twenty smear examinations. The results are at such great variance in regard to the character, amount and duration of the discharge, that it is hardly worth while to present them all in detail. I will content myself with giving the history of Case 1.

S. J., age 10; for the past four years she noticed vaginal discharge. Prior to this she had some exanthematous disease for which she was treated at Willard Parker Hospital. She dates the onset of the discharge from that time. Patient was referred from one of the pediatric clinics at the Mount Sinai Hospital Dispensary, on April 3, 1912. There was then a slight amount of secretion which was positive for gonococcus. Endoscopy showed the vaginal mucosa bathed by thin sero-granular secretion; there were no acute inflammatory changes. Treatment was begun by Dr. Barnett, who put her on urotropin internally and argyrol 10% locally. He tried in succession silver nitrate 10%, bichloride of mercury 1-10,000 to 1-4000, then tincture of iodine and lugol solution for irrigations, and finally tr. iodine applied locally to the vagina. The smear examinations during this time, *i.e.*, a period of 16 months, were positive seventeen times and negative eighteen times. August 19, 1913, I examined the patient and found then a sero-granular discharge. The child in the meantime had developed and seemed normal in other respects. There were no symptoms suggestive of metastatic spread of the disease. September 18, 1913, rectal examination to determine whether there was any peritoneal exudate, tubo-ovarian disease, etc., proved negative. There was no thickening of the adnexa; no masses were palpable, and the uterus was small and freely movable without eliciting tenderness or pain. Smears were negative on 4 occasions in the period between September 28, 1913, and October 31, 1913. The discharge was considerably less; 10% silver nitrate applications were used. December 1, 1913, she was without discharge and was therefore not treated but observed till January 19, 1914, when she again appeared with a slight amount of secretion. This was negative for gonococcus. She was then treated by protargol 25% topically, and again by painting the cervix and vagina with tr. iodine. As the amount of discharge was almost negligible I decided to let her stay away for a longer period. She returned two months later with the local condition the same as when last seen. Thereafter, for a period of 15 months, although the character of the discharge was the same and no manner of treatment employed, the vaginal smears continued to be irregularly positive and negative. The number of negative reports would preponderate in the proportion of 3 and 4 to 1. The child is now 14 years old, has had her menses nearly a year. She has had no disturbance to speak of during her periods and appears to be well developed in every way. The smear examinations are still positive and negative. Altogether there were over 50 slide examinations.

Summary: A child 6 years old is ill with one of the exanthemata, for which she is treated at a special quarantine hospital. She leaves the hospital with vaginal discharge. This is untreated for four years, at the end of which time treatment is begun by various methods for four years. Puberty sets in meanwhile and the girl develops normally. The discharge becomes negligible, but slide examinations are variously positive and negative, no matter whether she is treated or not treated.

While many of the other children were not observed for a similar length of time, their history would fit in precisely with any given period of time under which this patient was observed. It must be said in this connection that smears were taken from the very depth of the vagina through the aid of the endoscope devised for this purpose, and that even the vaginal portion of the cervix was accessible in every case.

It soon became evident that if we were to rely solely upon the report of the *smear examination we could make no headway with any kind of treatment.* When the discharge disappeared under whatever procedure we adopted, and the patient's condition could be regarded as perfectly satisfactory, the report, nevertheless, would be returned positive or negative. When the child appeared for control examination from one month to two years or more after further treatment was considered unnecessary, the same experience with the smear examination was encountered.*

The relation between active treatment, the smear report and the character and amount of the discharge was very interesting. At first I used strong solutions of silver, as recommended by Kelly. After each application there followed a very profuse discharge of mucus. The smear reports from this discharge were often positive and occasionally negative. The silver solutions were then used in weaker dilutions, and by and by the discharge became less and less and almost absent.

A similar reaction took place in cases with very scanty discharge—cases which appeared simple and of the non-infective type of vaginitis. As time went on I began using weaker solutions and used argyrol, which had the advantage of being practically painless and of being more oily and hence easier of application. The amount of reaction was considerably less. Later on I adopted the plan of infrequent applications, and for control purposes, in those instances where I felt clinically certain of their non-gonorrheal character, I simply observed them, took smears from time to time but did not apply medication. The latter group of cases did better as far as discharge is concerned; *the smear reports were just as confusing as in other cases.*

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* Barnett came to the conclusion that three consecutive smears could determine a cure, but added that the children were to return for further control.

DISCUSSION OF THE PROBLEM.

The contradiction between the smear report and the clinical status of the case may be discussed from two viewpoints: first, that the gonococcus, if responsible for vaginitis in children, has markedly variable activities, often lying dormant, capable of being stirred to activity by certain medication, or more often, perhaps, by virtue of its own peculiar biologic properties, which are not exhibited by the adult form; and second, that the organism reported by the smear is some other organism than gonococcus, almost indistinguishable from it but present in the vaginal discharge without having the pathogenic significance of the gonococcus. If the first viewpoint were correct, then practically all of the 255 cases must be regarded as gonorrheal; and if we consider that a great many cases go unobserved or are untreated, the prevalence of this disease might be regarded as truly formidable. If young girls who commonly have vaginal discharge were subjected to smear examinations and a similar organism found, the incidence of innocent gonorrhea would be almost universal. No one, however, thinks of charging young girls of the age of puberty with gonorrheal infection because they happen to have some discharge. Vaginal discharge is a very common thing, and is only natural because a certain amount of secretion is physiological and normal for all mucous membranes. The onset of menses, etc., naturally accounts for a greater secretory activity of the genitalia in young girls. *In children and in infants there are other factors that enter into play.*

Inquiry into such factors in the 100 children in whose cases a definite history was obtainable elicited the fact that *32 had been in hospitals suffering for the most part with an exanthematous disease;* in other instances they had pneumonia, typhoid, dysentery, appendicitis, chorea, etc. In 15 instances there was a definite statement that the child had not been confined in any hospital, but there is no record of whether these children were ill at home just prior to the onset of the vaginal discharge. It is not necessary to think of a direct gonorrheal inoculation, as for example, by means of thermometers or careless handling by nurses infected with the venereal trouble, etc. The exanthematous disease may properly be assumed to cause a certain amount of desquamation of the vaginal mucosa; secondary invading microörganisms propagate more in the discharge. The micrococcus catarrhalis, morphologically often indistinguishable from the gonococcus in the simple smear examination, is one of these organisms. In the other diseases with pneumococcus, the meningococcus, the streptococcus and the other pathogenic bacteria present in the body these microörganisms may set up a vaginitis with purulent discharge similar to that seen in cases of acute suppurative otitis.

Vaginal discharge in infants and small children may have the same pathogenesis, and in my opinion is far more commonly due to these bacteria than to the gonococcus.

Apart from these considerations, careful observation of small infants has shown repeatedly that the fecal motion bathes and soils the vulva and the clitoris and leaves excreta in the labiocutaneous and interlabial grooves, and at the vestibulum. Urine also leaves its residue. If the child is not frequently and carefully cleaned after each soiling there is the nidus for more bacteria, and in many instances the vagina is invaded.* During the act of crying, coughing, rapid and labored breathing and straining, particularly during acute illness, the hymenal orifice opens and closes, and not infrequently débris such as above mentioned is aspirated into the vaginal canal. *The colon bacillus and other rectal flora under the new influence of even normal vaginal secretions may be assumed to take on an irritative activity and set up a vaginal discharge.* When one reflects how often and for how long infants and even small children are obliged to lie in their crib before receiving necessary attention in the large wards of hospitals, owing, of course, to inadequate nursing facilities, it will be seen that this spontaneous method of infection is not so remote a possibility.

In favor of this idea is the comparative scarcity of vaginitis in children ill with an exanthemata but who are treated at home.† The presence of pus in the vagina, even though it be in that of infants, irresistibly suggests a venereal origin. In this connection I may mention the one case in our series which had for a long time been treated by vaccine in another clinic for gonorrheal vaginitis. This little girl had suffered from a very profuse and very obstinate discharge which cleared up promptly on the removal of an incrusted hair-pin from the vagina.[6]

A small number of children date their discharge from birth. This does not necessarily mean gonorrheal infection. I have examined a number of female fetuses 4 months old and over and found a whitish discharge from the vagina in a number of them. *Treatment in innocent cases may serve to plant bacteria where they did not exist before and to start a chronic discharge.* To obviate such contamination, in simple cases which clinically make the impression of a non-gonorrheal vaginitis, I have massaged the vagina through the rectum, succeeding in this way in bringing out any vaginal secretion that may be present; this could then be examined microscopically.

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* Dr. Martha Wolstein of the Rockefeller Institute, who kindly examined some smears for control purposes, reported that she found fecal material microscopically, though the swab was carefully applied through the endoscope to the depth of the vagina, in every case in which smear was made.

† Where there may have been arthritic symptoms but where the gonorrheal character was not definitely established by x-ray, at least, or by actual recovery of the gonococcus from the joint, the diagnosis may be left in doubt.

SUMMARY AND CONCLUSIONS.

Of all the cases seen, I should say, from the clinical side, that the very smallest number were truly gonorrheal, resembling the disease as met with in the adult. A definite history of contact infection, as by perverts (the infectionist theory of Pollock) or through attempts of rape, was obtained in only one case. In two others there was definitely the evidence of a ruptured hymen without such a history of assault. In the vast majority of cases the complications and sequelae of gonorrhea were entirely lacking. The absence of gonorrheal ophthalmia, of urethritis, of joint symptoms and of *peritoneal symptoms*, in spite of the apparent chronicity of the discharge, certainly makes one reflect that this condition in children is at least different from the gonorrhea of adults. It certainly does not have the virulence nor the tendency to cause metastatic foci as it does in the adult. In this connection Louise Pearce's[7] work on the comparison of adult and infant types of gonococci is both suggestive and significant. She found in working with strains of gonococci from adults and strains from children that, both in agglutination and complement-fixation experiments, these strains differed so uniformly that they could be distinguished as two distinct types corresponding to the clinical source of the strains. Her experimental material was derived from 6 cases of vaginitis in children, 3 cases of gonorrheal ophthalmia (*a*) neonatorum; (*b*) girl 18 years with vaginitis; and (*c*) boy 15 years with urethritis; and finally 8 cases of gonorrhea in adults.

It is of the greatest significance to note that the strains of gonococci isolated from the three cases of ophthalmia are classed by Pearce with the adult type. In the cases observed by me there was not a single instance of ophthalmia.

If the disease were really as prevalent as we have been led to suppose,[*] we ought to see more dangerous sequelae later on in life. We ought to see more pyosalpinx and pelvic peritonitis in young girls. We know, however, that practically in every instance where such condition obtains in a young girl of 14 years and upward there is always a definite history of recent exposure, with all other signs and symptoms of a gonorrheal infection.

That a true gonorrheal infection does occur in children cannot be denied; there have been enough reports where the gonococcus of Neisser was recovered from metastatic foci in the body joints,[†] eyes, etc., associating a gonorrheal vaginitis. The actual incidence of the latter in children is probably very small. My clinical experience coincides with that of V. Pirquet and V. Reuss, for example, who stated that they see in their very large clinical material only 5 or 6 cases yearly. *If the majority of children having vaginal discharge are infected with the gonococcus, it must in all probability be a different microörganism from that described by Neisser as occurring in adults.* Whether it is some other organism, however, can be established only by proper *bacteriological and serological tests.* Thus the well-recognized infectious vaginal catarrh which spreads through hospital wards may have some other bacteriological etiology than the gonococcus. Some other method of diagnostic control than that offered by smear examination must be available if we are to treat it intelligently and scientifically. I have found not only the greatest discrepancy between the clinical picture and the smear report, but in a series where two different bacteriologists made the examination there was the greatest contradiction in their reports on the same material examined. The bacteriologists were of unquestionable reputation, with the best facilities for bacteriological examination. While this difference of opinion is possible in any other laboratory test, in this work it adds considerably to the other difficulties in coping with the vaginitis problem.

From my experience with these cases I am led to the following conclusion:

To establish the diagnosis of *gonorrheal vaginitis* in children and infants, it is necessary to have: 1, A purulent discharge from the vagina. 2, The intracellular Gram-negative diplococcus of Neisser must be discovered in the pus cells (smears and cultures are facilitated by the endoscope). 3, This organism must further be grown on suitable culture media and properly identified as the gonococcus. 4, In case of doubt, complement-fixation tests and agglutination tests should also be resorted to. In the absence of these tests we are not justified in considering any vaginal discharge in children as gonorrheal, nor are we justified in treating it as such. *The smear examination, even by the Gram stain of secretion or discharge from the vagina, is unreliable and misleading, and hence valueless as a method of diagnosis.* The desideratum in the problem of vaginitis among children, therefore, is more complete and scientific bacteriological study, including animal inoculation.

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[*] P. C. Jeans, quoted by Taussig, found, out of a total of 262 girls over one year old coming to all branches of the dispensary of the Children's Hospital in a period of five months, 14, or 5.8%, were infected with gonorrheal vaginitis.

[†] Of Holt's 26 cases of gonorrheal arthritis in children, 19 were in males and 7 in females. Of the females only four had vaginitis, although 273 cases of vaginitis were observed.

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THE PRIMARY LESION OF TUBERCULOSIS; ITS SIGNIFICANCE, DIAGNOSIS AND TREATMENT.*

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IN a lecture on tuberculosis to a group of American medical men in Vienna, I heard Prof. Hamburger state at the outset of his lecture that in order to understand adult tuberculosis one must study the tuberculosis of infancy. What he meant was that to understand the whole picture of tuberculosis it is necessary to grasp the meaning of primary tuberculosis; that tuberculosis is a disease similar to syphilis in that they are diseases with a primary lesion and primary stage whose symptoms and pathology are different from the later manifestations of the disease.

What was formerly known as the chronic glandular tuberculosis of infancy or what was meant when it was said that a baby might be infected with tuberculosis but not have the disease is now recognized as the primary stage of tuberculosis. It usually occurs in infancy or early life, but I believe that an individual, no matter what his age, must first have the primary lesion to be followed by later destructive types of the disease; and I feel sure that this is the teaching of recent investigators in tuberculosis. The primary lesion may lie dormant many years, when, under conditions suited for its breaking down it will spread and give rise to the pathological changes which have been taught as active tuberculosis or tuberculous disease. To say that a baby is infected but does not have a disease just because we may never have recognized the symptoms, is not tenable with modern pathology, especially as there remains true pathological tissue after infection. I agree that it does not give signs and symptoms recognizable as those of tuberculosis, but it does give symptoms of its own, and its importance is far more reaching in that it is the potential of the most serious malady of the human race. Granting its importance, I wish to bring to your consideration the primary lesion of tuberculosis, its significance, diagnosis, and treatment.

In order to illustrate to you what constitutes a primary lesion and how it is formed, I will describe an experiment shown me by Prof. Hamburger and which you may find more fully described in his work, "Die Tuberculose des Kindesalters." If a tuberculosis-free guinea-pig be scratched on one shoulder and inoculated in the scratch with a pure culture of tubercle bacilli, a primary lesion will be started. The scratch with this small dose will show no change macroscopically for a week, when an infiltration will appear about the scratch. At the same time the axillary glands draining the region enlarge and ultimately form a mass of large discrete glands. Here is a primary lesion, the portal of entry, and the extension through the lymphatics to glands draining the region of the portal of entry. This represents what takes place no matter where the infection first enters; there is the primary focus and the enlargement of the adjacent glands. If the first infection is in the adenoids then there are post-cervical glands; if in the tonsil, anterior cervical glands; if in the lung, bronchial glands; if in the intestine, then mesenteric glands; and anywhere in a cut of the skin the glands draining the region will enlarge. The portal of entry in the human is usually not found except in the lung, where it is represented by a grayish area the size of a mustard seed or pea; but I feel sure that if it were possible to search minutely enough it might be found in other localities. The portal of entry and the mass of glands constitute the primary lesion. It is impossible to have the one without the other, consequently, they go together to make up the primary lesion. The primary lesion and its symptoms make the primary stage of tuberculosis.

The primary focus may be anywhere that the bacilli happen to locate, but naturally there are some places more accessible than others. The two most common places are the lungs and the intestines. Figures as to the relative proportion of the two regions vary with the locality in which the observer lives. If in a locality where the milk supply is not safeguarded against tuberculosis, there will be a larger proportion of primary intestinal tuberculosis than where the milk supply is from tested cattle; though I must say I think the region of the primary lesion is no criterion, whether the infection is bovine or human; though if intestinal it is presumptive evidence that the bacilli were carried in the food, probably milk. However, the milk must be accidentally infected during or after milking unless there is disease of the udder; for there is no evidence to prove that bacilli can pass through the uninfected udder or breast but that they are introduced from dust and dirt from the cow or from a tuberculous milk handler, and hence they may be human or bovine, but the chances are in favor of bovine. Other entry points are the adenoids, tonsils and skin. The adenoids and tonsils are not so common in infants as in older children. The skin must be broken, and though not relatively so common as the other portals, is not a negligible source, as there are many cases on record where primary infection occurred during the rite of circumcision.

By far the greater proportion of the infections are in the lungs, and each case of primary bronchial glands tuberculosis indicates a close relationship with an open case of tuberculosis.

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* Read before the Medical Association of Central New York, in Auburn, New York, on October 18, 1917.

We were formerly taught that it took a long exposure to a tuberculous individual to acquire tuberculosis. One breath or one drink of milk is sufficient. We now know that it does not take a long time to infect, and the older thought applies to the appearance of secondary tuberculosis due to continued exposure or to the breaking down of the primary lesion. The relationship must be close enough to get the sputum laden with bacilli directly by kissing, or by breathing in droplets of infected sputum thrown out by coughing, talking or sneezing; by inhalation of dust infected by such sputum; or by taking in infected food. This fact alone will explain why so many are infected in infancy and early childhood, for it is at this age that such relationship is established. They are handled and they creep about in the dust. Hence what was supposed to be a type of tuberculosis characteristic of infancy is merely the primary lesion acquired at the time when all the conditions are right.

If, as I say, the primary lesion is potential of trouble, it seems to presuppose that it is harmless and symptomless. Not at all so, for I am sure that in infancy, though it does not give symptoms ordinarily recognized as those of tuberculosis, it may give general symptoms of anemia, fever, indigestion with its resulting malnutrition and failure to gain, and I feel reasonably sure that it also gives such symptoms in older children. The symptoms are due to absorption of toxic products formed by the primary lesion and are consequently of a general character and not localizing. Such disturbance of the general health may be overcome and no permanent disability result; it is a part of the primary stage without any further demonstrable pathology in life than of the primary lesion. However, if these symptoms are not relieved by proper treatment, the tissues lose their resistance, the primary glands break down and the disease is spread.

Now to illustrate what may take place in an individual with a primary tuberculosis a second experiment on our already infected guinea-pig is of interest. Repeat the experiment on the other shoulder with a similar small dose of bacilli. The scratch will heal and later small glands appear in the axilla. Nothing more happens if the individual is in good conditon or if the dose is not large. In other words, there is a certain amount of immunity to repeated small doses. There is some experimental evidence in animals to show that tissues differ in their resistance and consequently the number of bacilli necessary to set up secondary processes varies. This or other reasons make it possible for fewer organisms to set up secondary lesions in the lung than in the intestine. The point I wish to make is that there is a slight immunity which, if broken down, gives a chance of exacerbation in and spread from the primary lesion or for reinfection to start inflammatory processes. This immunity seems to be far less in the infant than later in life.

If this lowering of the resistance and spread from the primary lesion may be called the endogenous cause of spread there is an exogenous one in that other infections draining into the same glands cause secondary breaking down and spread of bacilli which have been hiding there and which hide there throughout life ready to be spread. Hence the disastrous results after measles, pertussis, pneumonia, and bronchitis where there are preëxistent primary bronchial glands; or after diarrheas where there existed primary mesenteric glands.

Now to compare the primary and secondary lesions: The primary focus may remain apparently arrested; the secondary ulcerates; the primary glands are large and discrete; the secondary small, though there may be quite a mass of them. Hence tuberculous ulceration of the bowel, usually multiple, with small mesenteric glands, is secondary; tuberculous bronchopneumonia with small glands is secondary; a single intestinal ulcer with large glands is primary. To go further into secondary tuberculosis would lead us away from our subject, but let me say that secondary tuberculosis in infancy shows very little or no tendency to heal, whatever it may do in adults.

You may easily see that a baby whose tissues are sensitized by a primary lesion is in a highly precarious state to keep in a tuberculous surrounding, for breathing in or swallowing bacilli may set up a secondary process if his general condition is poor. This is a considerable danger, but curiously the spread of the disease almost always comes from the primary glands and the primary focus, if it remain, which break down on account of the lowered general resistance; or a new non-tuberculous infection into the same region starts up inflammation which softens the primary glands, and hence, from either cause or both together the softened glands dump bacilli into the surrounding tissues or into the blood or lymph. The spread may be to the tissues about the primary glands or primary focus, thus giving rise to the destructive hilus tuberculosis seen in infancy, to pneumonia about the primary focus, or to the peritonitis seen with tabes mesentericus. This has been called extension by contiguity. The primary glands may break down, ulcerate into a blood vessel, lymphatic, or into a bronchus. If the break is into a blood vessel the spread will give miliary tuberculosis of the various organs including the meninges; if into the lymphatics, spread to other glands; if into a bronchus, then by aspiration of the sputum into the smaller tubes, bronchopneumonia; by coughing, the sputum laden with bacilli may find lodging in the tonsil causing secondary cervical glands, and such sputum swallowed may give secondary ulceration of the intestine. Thus the spread is in one of four ways to the surrounding parts, by the blood, lymph, or sputum.

Now, in the diagnosis, if you bear in mind the characteristics of the primary lesion, that it is composed of a primary focus which is never found except in the lung and then only at autopsy, and of a mass of large discrete glands, then you may see that your diagnosis must rest upon finding such a mass of glands and that in primary tuberculosis you are not going to find any signs such as we have always been taught to look for as tuberculous, which are all secondary; consequently, the signs must vary with the locality involved. If the glands are situated in the neck they can be seen and palpated; if in the abdomen they may be palpated and are usually found in the right iliac fossa. In the chest, however, the glands are detected by signs and other methods which I will describe at greater length.

The history is significant only when there is evidence of direct exposure, but lack of such history means nothing. There is as much tuberculosis in children of non-tuberculous families, or rather negative family history, as where there is a definite history. This fact shows that it is easy to infect infants, that the chances for infection are too many, and that only a short chance exposure is necessary.

Primary tuberculosis may apparently run a symptomless course and be discovered only when doing a series of tuberculin tests or when trying to find the number infected in a family where there is an open case of tuberculosis. It seems to be true that the younger the individual when infected the greater the probability of symptoms from the primary lesion, and that the older children are the ones to run a course without symptoms. On the other hand, as the symptoms are due to absorption of toxins from the primary lesion it seems to me impossible to state that any case may not have had slight fever, indigestion or fail to gain properly at some time due to his primary tuberculosis, and such symptomless cases will be fewer the more diligently we search for primary tuberculosis. It seems to me far better to consider all tuberculosis either inactive or active rather than say that a baby may be infected but not have the disease of tuberculosis. Here lies the significance of the primary lesion; it is a disease process that may at any time light up.

The symptoms are of little help in the diagnosis for they do not attract the attention to the region involved. They are general in character, as slight fever, anemia, malnutrition, peevishness, indigestion, usually showing marked fat intolerance. Cough is an occasional symptom of primary bronchial glands, but I have a feeling that if there is the brassy cough and evidence of bronchial glands, that the process is already more than a primary one and that there is extension or that the glands are very large and caseous and in danger of spread.

I have said that in certain localities the glands may be palpated, but bear in mind that you are to feel a mass of large glands, not a large mass of small glands; for you may have secondary intestinal ulceration with numerous small mesenteric glands which together form a large mass, while the primary lesion is in the bronchial glands. On the other hand, if the mesenteric glands are large, hard, discrete, you would have a right to conclude that there is a primary intestinal lesion with primary mesenteric glands even though there are signs of enlarged bronchial glands which, under those circumstances, may be due to a recent bronchopneumonia of non-tuberculous origin.

In the chest the glands cannot be palpated and we must resort to percussion, auscultation and x-ray. I think by far the most reliable information is gained by careful percussion, but every little detail in the technic must be observed. When percussing the chest for glands I prefer that the infant lie on a smooth, hard surface rather than have it held on the lap. I am speaking of primary tuberculosis so I leave out consideration of the examination of the lungs, for there will be nothing found there as the primary focus is too small to give signs. The infant should lie with the spine straight and when examining the back the arms should be held out at right angles to get the scapulae out of the way, thus baring the interscapular spaces. The percussion on the two sides must be symmetrical with relation to the sternum in front and to the vertebrae behind. When percussing for spinal dulness, that is dulness in the median line in the back, compare percussion over the spinous processes or over the spaces, not a process and a space, for the process will be duller than the space anyway. In front there will be dulness over the third space to the right of the sternum; the left side is masked by the normal dulness due to the great vessels and cannot be determined. This dulness in front is not to be confused with thymus dulness as there is no dulness high by the side of the sternum. In the back a spinal dulness below the third dorsal vertebra is suspicious, and if accompanied by dulness between the vertebrae and the scapula, that is interscapular dulness, is diagnostic of thickening at the root of the lung on that side. I think a moderately low spinal dulness may exist without interscapular dulness and is then of no importance. Interscapular dulness cannot exist without low spinal dulness and the two together are of the greatest importance. I think a diagnosis of bronchial glands is not justified unless there is interscapular dulness. There is slight dulness in the left interscapular space normally, consequently if both sides are of equal intensity there is a pathological dulness on the right. The left side must be distinctly dull to warrant a diagnosis of left-sided infiltration. Naturally, from what I have said of the primary lesion, the side in which the interscapular dulness is located points to the side of the primary focus.

By auscultation one tries to get the D'Espine sign, by which is meant the point on the spine going from above downward where the whispered voice or expiration changes from bronchial to vesicular in character. The loudness or harshness of the voice or expiration does not show the sign but the bronchial character which may even be quite distant. In infants it is normally at the second dorsal vertebra and may be at the third without any demonstrable lesion at the hilus of the lung. In older children and adults the change takes place at the seventh cervical, but in any case I do not think it suggestive until it is down to the third or lower and then only diagnostic if backed up by low spinal and interscapular dulness.

The x-ray should be used whenever possible to confirm the physical findings. It is only confirmatory, for no one can say from a plate that a baby has tuberculosis. I feel sure that any case that will show on the plate a definite shadow at the lung root outside of the heart border will give to percussion low spinal dulness and interscapular dulness, and I would not be willing to condemn an individual on the x-ray plate alone. The evidence of percussion, auscultation and x-ray must all be used in making the diagnosis of enlarged bronchial glands.

These signs indicate only enlargement of the glands situated along the trachea, at the bifurcation of the trachea, or following the larger bronchi, all commonly designated as bronchial glands, but do not make out the case to be tuberculous. Before a diagnosis of tuberculosis can be made, all other causes of enlargement of the bronchial glands must be ruled out, as recent pneumonia or any acute or chronic process in the lung which will cause enlargement of the glands. However, if the history points to recent acute lung disease, the glands will soon disappear. If there are still signs in the lungs the case cannot be one of simple primary tuberculosis which gives no lung signs. The diagnosis where there are lung signs lies between secondary tuberculosis and something not tuberculosis or some acute process plus primary tuberculosis, and then only time and repeated examination will tell.

The examination of the sputum is of no assistance, as the primary lesion is a closed tuberculosis, and if bacilli are found it means secondary tuberculosis. For the same reason guinea-pig tests are impossible. The various tuberculin tests are of great assistance in determining if an individual is tuberculous, but they are reliable only if positive and then only indicate that there is tuberculosis present, but have no diagnostic value as to where the lesion is or what stage it is in. If the individual has only one mass of large glands and a positive tuberculin test then the chances are that that is the primary lesion. If there are several masses of glands, the test does not point to the primary glands, but you must find them by picking out the oldest and largest glands. A negative test, especially in infancy, means nothing, for there are many chances that the infant is not in the right condition to react and may react at one time and not at another. A baby with definite signs I should consider tuberculous and treat as such in spite of the tuberculin tests. I do not intend to discount the value of the test but all the exact knowledge that it affords is that there is tuberculosis somewhere in the case and that is absolutely reliable, for there cannot be a positive tuberculin test where there is no tuberculosis. It does not indicate the location of the primary lesion nor the stage of the disease and I am still to be convinced that it has any bearing on the prognosis. The tests require too much interpretation to be of clinical value except as indicative of tuberculosis if positive.

Having established the diagnosis of primary tuberculosis or made a probable one, what should be done? It has been taught that such an infant has an infection with tuberculosis but not a disease and consequently there is nothing to be done. If a man has a typhoid, the walking type, would you let him run about eating anything he wanted and doing anything he wanted and take the chance of serious complications? That question is ridiculous but it is equal folly to neglect to look out for a lesion that has the pathology and possibilities of primary tuberculosis. Pathology shows that there is no danger from the primary lesion as it is, hence the treatment must be to keep the disease primary. From what I said about the causes of spread, the treatment must be directed to the maintenance of the general resistance above the point where the tissues can break down, to the prevention of reinfection from tuberculous surroundings, and to the prevention of new infection in the same region drained by the primary glands.

There are three essentials in treating the general symptoms of primary tuberculosis,—fresh air, well-regulated diet, and rest. Fresh air does not mean cold air and indeed it may mean very warm, fresh air; for coldness is not an indication of freshness. Regulation of diet to avoid any sign of indigestion; especially look out for fat indigestion, for infants and children with tuberculosis tolerate fat badly. The natural thing for a mother to do with a child not gaining is to increase the fat. Do not be afraid of low fats. The rest should be sufficient to establish and maintain good general condition and gain in weight even to the point of demanding absolute bed treatment. I have kept young infants flat in bed an entire year before gaining the desired improvement.

As for reinfection from open cases, so long as the infant is in good condition the danger is not great, as there is a certain amount of immunity to small doses. The danger arises when the tissues are non-resistant and a new lot of organisms are breathed in or swallowed and then set up secondary changes. That danger to a poorly nourished child is, I think, considerable. The difficulties encountered in trying to remove such a child from the tuberculous atmosphere are probably insurmountable in most cases, hence the greater need of good care.

The third preventive measure in the spread of the primary lesion—protection from other infectious diseases affecting the same region—is also difficult to carry out. The child with primary cervical glands should be protected from upper respiratory infection and tonsillitis; with primary bronchial glands, from pneumonia, pertussis, measles, etc.; with primary mesenteric glands, from infectious diarrhea. This all means that the parents should understand the dangers in order to help intelligently.

As for drug treatment, there is no specific treatment. I can see no indication for medicine unless for a simple tonic, iron, and cathartics. If the child will not eat and is constipated it is more than likely that he has some indigestion and is overtired. Put him to bed and look out for his fats and I think his appetite will return. Tuberculin treatment is dangerous in infancy for it is too easy to overcome the slight immunity with consequent over-sensitization of the tissues, which then break down and the disease is spread.

Anyone who clings to the old idea that a baby or individual may be infected and not have the disease of tuberculosis must wait till he gets the signs of what he considers to be tuberculosis before beginning treatment. In other words, he is waiting for secondary tuberculosis and has lost his opportunity of arresting the disease within safe limits.

In conclusion let me repeat that the doctrine of the primary lesion must be accepted in order to understand the whole disease of tuberculosis and hence to treat and combat it. It seems to me very dangerous to consider that a baby exposed to tuberculosis is safe, for he will become only infected and not have a disease. The only safe course is not to let him get infected and if, unhappily, he does, recognize that he has a process that may break down and cause serious trouble. If we recognize the importance of the primary lesion and the necessity of keeping it as a primary lesion, then we have the chance to do most for the individual tuberculous subject, and far more than all for the prevention of the spread of tuberculosis among our fellow men, for we have then avoided secondary broken-down processes which throw out living bacilli.

* * *

LIPOIDS IN 131 DIABETIC BLOODS.

By Horace Gray, M.D., Boston.

[From the Department of Biological Chemistry, Harvard Medical School.]

(*Concluded from page 123*)

BLOOD SUGAR.

Increase of glucose in the blood might be expected to be accompanied by increase of lipoids. Comparing the group averages, this *is* found, first in T.F.A. in plasma, but only after the blood sugar has reached about 0.3%; and second in L. in corpuscles, beginning when the B.S. is slightly over 0.2%.

Comparing the *lowest* lipoid values in the lowest and highest B.S. groups, one finds no significant difference, though a rather higher level in the latter.

TABLE XXV.

RELATION OF BLOOD SUGAR TO BLOOD LIPOIDS.

Blood Sugar Per Cent.	No. of Bloods	Blood Lipoids in Per Cent.																			
		Total-Fat		Total Fatty Acids			Lecithin			Cholesterol			Glycerides		T. F. A. / L.			L. / C.			Total Lipoids
		W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.
.08—.11	19	0.93	1.00	0.59	0.69	0.45	0.34	0.29	0.39	0.29	0.34	0.21	0.37	0.17	1.67	2.47	1.03	1.19	0.90	1.98	1.14
.12—.16	19	1.10	1.34	0.79	0.98	0.48	0.35	0.32	0.39	0.31	0.36	0.21	0.65	0.23	2.16	3.11	1.30	1.24	0.97	1.96	1.49
.17—.21	17	1.17	1.36	0.85	0.97	0.52	0.34	0.32	0.38	0.33	0.38	0.24	0.63	0.33	2.25	2.96	1.30	1.18	0.91	1.60	1.48
.22—.26	22	0.96	1.14	0.67	0.78	0.41	0.35	0.31	0.41	0.35	0.36	0.21	0.44	0.14	1.72	2.54	1.04	1.25	0.90	2.10	1.25
.27—.31	20	1.19	1.42	0.86	1.03	0.58	0.37	0.33	0.42	0.33	0.39	0.23	0.68	0.30	2.21	1.94	1.38	1.21	0.93	1.89	1.48
.32+ (max. .45)	11	0.96	1.13	0.65	1.77	0.53	0.36	0.32	0.42	0.31	0.36	0.20	0.42	0.28	1.86	2.55	1.44	1.26	0.92	2.15	1.27
.08—11	Lowest Lipoids	0.62	0.63	0.37	0.48	0.25	0.25	0.16	0.28	.0.16	0.14	0.16	0.18	0.06	1.19	1.67	0.24	0.86	0.68	1.10	0.70
.32+ over	Lowest Lipoids	0.61	0.66	0.40	0.46	0.31	0.27	0.18	0.21	0.18	0.15	0.17	0.22	0.04	1.21	1.83	0.69	0.84	0.70	1.23	0.74
.08—.11	Highest Lipoids	1.59	1.64	1.12	1.09	0.72	0.45	0.45	0.51	0.49	0.65	0.40	0.71	0.42	2.11	3.11	1.56	1.75	1.18	3.00	1.82
.32+ over	Highest Lipoids	1.53	2.08	0.85	1.17	0.70	0.57	0.64	0.56	0.68	0.91	0.33	0.50	0.55	2.78	3.72	2.95	1.78	1.20	3.29	2.29

Comparing the *highest* lipoid values for the same extreme B. S. groups, one finds the expected higher lipoid level with the highest B.S., and by a slightly greater difference than in the last paragraph.

CORPUSCLE PER CENT. OF BLOOD.

The normal has been stated as 43 for men[1]; for women also as 43%.[2]

Miller, Keith and Rowntree conclude that "all but one were below the normal of 43%, the average being 35.8% in 12 cases before labor." That this "normal" value may be a trifle high is suggested by an average made from their table of 25 observations, giving 38%; also by an average of 38% made from the seven normal women in the series of 21 normal persons whose lipoid averages have been cited.[7] In the latter series the average for the two sexes together is approximately 41%.

The diabetic average for this series is 39%. The diabetic range is 24%-53% vs. 33%-49% in Keith's table of normals. See Table XXVI, which omits such bloods as were clotted, had stood, had no per cent. recorded, or had no total-fat done. The extreme percentages are not consistently paralleled by the lipoids, but these tend to increase when the corpuscle per cent. is abnormal, whether high or low. In other words, the total-fat average for each per cent. does not obviously rise in proportion to the variation± of the per cent. from normal. If, however, a broad normal group is made to include a 10%± variation from 41%, *i.e.*, 4 points±, and then the total-fat values for that group are averaged, the lipoid rise becomes obvious; about 60% increase, when corpuscles run either high or low.

TABLE XXVI.

RELATION OF CORPUSCLE PERCENTAGE TO LIPOIDS.

Corpuscles %	No. of specimens	Av. total-fat in W. B.	No. of specimens	Av. total-fat in W. B.
24	1	2.59		
25	0	0		
26	0	0		
27	0	0		
28	0	0		
29	1	2.94		
30	2	1.29	Low corps. %	
31	1	0.81		
32	7	2.50		
33	3	2.06		
34	3	1.16		
35	6	1.05		
36	7	0.98	31	1.59
37	5	1.32		
38	9	0.99		
39	10	1.28		
40	14	1.02	Av. corps. %	
41	7	0.85		
42	12	0.95		
43	8	0.89		
44	5	0.93		
45	1	0.72	71	1.02
46	2	5.11		
47	1	0.78		
48	2	1.16		
49	5	2.28	High corps. %	
50	0	0		
51	0	0		
52	1	1.89		
53	1	1.09	12	1.74

TABLE XXVII.

RELATION OF LACTESCENCE TO HYPERLIPEMIA.

	Plasma Density	No. of specimens	Total-fat in W.B., Av.	No. of spec.	Total-fat in W.B., Av.	No. of spec. becoming cloudy after 24 hrs.		Total-fat, Av.
1	Clear	80	0.94			6		
2	Opalescent, Almost clear	2	1.90			0		
3	Very faintly cloudy	4	1.41			1		
4	Faintly cloudy, Slightly cloudy	14	0.96	I		2		
5	Somewhat cloudy	2	1.14			0		
6	Cloudy	9	1.15			2		
7	Very cloudy, Muddy	3	1.00	114	1.00	0	11	0.88
8	Somewhat milky	4	2.71			0		
9	Quite milky, Milky but translucent	1	2.59			0		
10	Milky	1	2.94	II		0		
11	Thick, milky, Creamy	1	3.62	7	2.86	0		
12	Thick, creamy	2	9.23	2 III	9.23	0		

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[1] Keith, N. M., Rowntree, L. G., and Geraghty, J. T.: A Method for the Determination of Plasma and Blood Volume, Arch. Int. Med., October, 1915, xvi, pp. 547-576.

[2] Haldane, J., and Smith, J. L.: The Mass and Oxygen Capacity of the Blood in Man, Journ. Physiol., 1900, xxv, p. 331.

[3] Miller, J. R., Keith, N. M., and Rowntree, L. G.: Plasma and Blood Volume in Pregnancy, Jour. A.M.A., Aug. 28, 1915, lxv, pp. 779-782.

CLOUDY PLASMA.

That increasing opacity of the plasma indicates increase of the fatty substances is an old belief. This was here proportional with the *greater* degrees of density, but with the lesser not at all so. In Table XXVII the total-fat average shows no significant increase through the 7 groups "clear" to "muddy or very cloudy"; and jumps up only when the plasma becomes "somewhat milky."

The term "lipemia" (Greek λῐη, with a short i, by the way) has been avoided in this paper, because of its looseness, meaning to some observers gross creaminess, to others excess of lipoids micro-chemically.

Far the most appropriate name for the latter would seem to be "hyperlipemia," analogous to the familiar hyperglycemia; while for gross milkiness to the naked eye we may well use Widal's "lactescence." The density, or degree of lactescence, of each plasma was in this series described in 12 ways. The fat by Bloor's method in all specimens falling in each group are averaged in Table XXVII.

It shows the uselessness of trying by the cloudiness to predict the lipoid level. It is true that one may group these 12 into 3 broad divisions of some significance, as follows:

TABLE XXVIII.

	LACTESCENCE	HYPERLIPEMIA
I.	Clear to very cloudy	Total-fat about 1%
II.	Somewhat milky to thick milky	Total-fat about 3%
III.	Thick creamy	Total-fat about 9%

But the significance of these is lessened when we reflect:

1. That 93% of the series of bloods were in Group I.
2. That in that group, according to Table XXVIII, the gross appearance foretold nothing, save possibly that "clear" plasmas *average* low.
3. That this low *average* is misleading, since there are clear plasmas with high lipoids, *e.g.*, Blood No. 141 — Hist. No. 786=2.70%.
4. Of the cloudier plasmas in Group II, furthermore, it is easy to find values lower than many in Group I, *e.g.*, in "9, Quite milky," is Blood No. 537 = only 1.39%.

This agrees with the old observation of Widal, Weill and Laudat that "there is no necessary relation between the degrees of lipemia and lactescence."

Widal, F., Weill, A., and Laudat, M.: Semaine Méd., 1912, xxxii, 529.

Bloor has remarked on the clouding up of a clear plasma on standing at room temperature for 24 hours.[3] This has occurred 11 times in the present series. In these cases the average total-fat was only 0.88, compared with 1.00 for the whole 114 in the broad division which included the 11. Samples of this 24-hour cloudy plasma were worked up in only 2 of these 11 bloods. Table XXIX shows that total-fat and total-fatty-acid tend to rise, lecithin and cholesterol to fall. More figures are needed.

TABLE XXIX.

INFLUENCE OF STANDING 24–48 HOURS.

SPEC. NO.		TOT.-FAT	T. F. A.	L.	C.
161	Before standing	0.93	0.68	0.25^{D}	0.25
	After standing 24 hours	0.98	0.73	0.07^{D}	0.25
157	Before	3.25	2.67	0.46^{D}	0.58
	After	3.53	3.11	0.42^{D}	0.55

INFLUENCE OF THE VARIOUS FACTORS IN INDIVIDUAL PATIENTS.

The same influences that have been studied in grouped patients may be studied in the different bloods of each individual patient. There were 18 persons who each supplied 10 to 2 specimens, but want of certain determinations on some of these specimens reduced to 14 the number of patients presented in Table XXX. For each person the total-fat in whole-blood on the day after the *maximal, e.g.*, calories, was picked out of Table I and also on the day after the *minimal* calories, etc. The former was then found by calculation to exceed the latter by 9% of the latter's value. When a lipoid value after the maximal calories was *less* than after the minimal it was marked minus. This occurred disconcertingly often, and therefore only tentative conclusions seem justifiable. These are presented in Table XXX, with the most definite first.

Comparing that specimen of a patient's blood which showed his highest *blood sugar* with that showing his lowest, the total-fat in the former averaged 40% higher than the total-fat in the latter.

Comparing that specimen of a patient's blood taken at the end of the 24 hours showing his highest *carbohydrate balance* with that taken at the end of the 24 hours showing his lowest, the total-fat in the former averaged 11% lower than the total-fat in the latter.

Comparing that specimen of a patient's blood taken at the end of the 24 hours with the highest *dietary fat* with that taken at the end of the 24 hours with the lowest, the total-fat in the former averaged 5% higher than the total-fat in the latter.

Comparing highest *calories* with lowest, the total-fat after the former averaged 6% higher than after the latter.

TABLE XXX.

INFLUENCE OF BLOOD-SUGAR, CARBOHYDRATE BALANCE, DIETARY FAT, AND CALORIES.

HISTORY No.	No. OF SPEC.	B. S.	CH. BAL.	DIET. FAT	CAL.
1233	10	+192	+11	+9	+1
786	8	+225	−71	+16	+20
610	5	+9	+9	+51	+18
1070	4	−8	−23		−19
1085	4		−7	+7	+7
1213	4	+34	−5	+3	+92
1196	3	+28	+28	−22	−22
914	3	+72	−33	−33	−33
1160	2	−11	−11		−11
1227	2	−35			
1245	2	+19			
942	2	−31			
Total	12	+579 −97	+48 −150	+86 −55	+137 −86
Difference	12	+482	−102	+31	+51
Average		+40	−11	+5	+6

Any attempt to discuss the relation of these various observations to contemporary views of general lipoid metabolism in diabetes would be superfluous, in view of the exhaustive and recent statements of Bloor, of Allen, and of Joslin.

CLINICAL SEVERITY.

A further study of the specimens may be made according to clinical severity. Dr. Joslin has been kind enough to make this classification, presented in the Basal Table, beginning with the mildest at the top of the list. With many specimens it was impossible to do this more than approximately, but certainly the three main groups are accurate from a bedside viewpoint, combined with a knowledge of the condition of the urine, the acidosis and the blood sugar. The mild cases are those with a carbohydrate tolerance of 50 grams or more, although occasionally they would go below that. The severe cases, on the other hand, were those which had at some time a carbohydrate balance of 10 grams or less, though they often were above that level. When these three groups are each averaged, as in Table XXXI, it is seen that there is a progressive rise in the columns for Bloor's fat-method, total-fatty-acid, glycerides, and total-lipoids; but in lecithin and cholesterol there is very little difference between the mild group and the moderate group, and the rise is marked only in the severe group.

If the clinically mild cases are now subdivided into those with renal involvement and those without, it will be seen that the total-fatty-acid in the whole blood and the total-lipoids in the plasma are slightly higher in the nephritic group, as might be expected. That this difference is so slight, and that it appears in so few columns, is, however, natural enough. For, although "renal block" holds back sugar markedly, it can hardly "retain" fat when fat so seldom gets through. In the scanty literature on urinary lipoids are found reports varying from only 0.0002% fatty-acid to 0.44 grams ether-extract per 24 hours.

TABLE XXXI.

INFLUENCE OF CLINICAL SEVERITY.

	No. OF BLOODS	TOTAL-FAT		TOTAL FATTY ACIDS			L.			C.			GLYCERIDES		TOTAL LIPOIDS
		W. B.	Pl.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	Pl.	Cps.	Pl.
Mild	32	0.83	0.90	0.59	0.64	0.45	0.32	0.24	0.42	0.24	0.26	0.21	0.38	0.18	0.98
Moderate	37	0.91	1.06	0.65	0.75	0.48	0.33	0.28	0.40	0.26	0.30	0.20	0.46	0.23	1.16
Severe	55	1.41	1.80	1.01	1.28	0.62	0.40	0.40	0.40	0.41	0.51	0.24	0.84	0.38	1.98
Mild { with nephritis ...	12	0.87	0.93	0.63	0.66	0.53	0.32	0.24	0.43	0.24	0.26	0.22	0.41	0.24	1.01
Mild { without nephritis.	20	0.86	0.88	0.54	0.63	0.40	0.32	0.24	0.41	0.25	0.25	0.21	0.36	0.13	0.97
Severe { with acidosis ...	21	1.32	1.66	0.99	1.23	0.58	0.39	0.38	0.40	0.33	0.43	0.22	0.82	0.32	1.81
Severe { without acidosis	34	1.49	1.87	1.02	1.31	0.64	0.41	0.41	0.40	0.46	0.57	0.25	0.86	0.43	2.07

Hybbinette, S.: Ueber die Gegenwart von nicht fluchtige fette Sauren im normalen Menschenharn, Skand. Arch. für Physiol., 1897, vii, pp. 380-384.

Reale, E.: Ausscheidung der Fette durch den Harn, Riv. di Clin. e Therap., 1897, No. 4; also reviewed in Malys Jahresbericht über die Fortschritte der Thierchemie, 1897, xxvii, p. 43.

If the clinically severe cases are subdivided into those with acidosis and those without, it will be seen that the lipoids run higher in the latter group, right across the page. This is surprising, because a similar comparison already made between the specimens with acidosis and those without in the entire 131 specimens, instead of in these 53, shows the reverse, namely, the higher lipoids in the specimens *with* acidosis, as, indeed, would be expected.

CONCLUSIONS.

1. The most satisfactory *single determination* for following a diabetic patient is Bloor's fat-method (total-fat) on whole blood.
2. There is a lipoid *threshold,* by Bloor's method about 0.7%, analogous to the glucose threshold of 0.1%.
3. A normal Bloor-fat-value was found only 9 times in 124 bloods, *i.e.,* only about 7.0% of diabetics come inside the threshold of the normal range.
4. The lipoid increases in diabetes are *most marked* in:
   I. Glycerides, then:
   II. Total-fatty-acid,
   III. Cholesterol,
   IV. Phosphatides.
5. The increase of cholesterol *beside* the glycerides seems indeed pathognomonic of the long-standing hyperlipemia of diabetes, contrasted with the acute hyperlipemia of overfeeding which has been shown by Bloor to consist of only increased fatty acid.
6. The *maximal* total-lipoid value of this series was 16.3%.
7. The *plasma* exhibited much greater increase of lipoids than the corpuscles.
8. After ether *anesthesia* in one case, total-fatty-acid was increased, followed by a fall below that patient's level before anesthesia. Phosphatide and cholesterol were unchanged.
9. *Sex,* in diabetes, makes no significant difference in lipoid level.
10. The greater the *duration,* the lower the lipoids.
11. The higher the lipoids, the more unfavorable is the *prognosis.* The danger of deranged fat-metabolism: acidosis and coma!
12. *Over*weight at the time blood is taken is accompanied by *slightly* high lipoids.
13. *Under*weight at the time blood is taken is accompanied by *markedly* high lipoids.
14. The greater the *loss of weight, i.e.,* from maximal weight (presumably onset) to weight at time the last blood was taken, however, the *lower* the lipoids, compared with those patients whose weight-loss has been less.
15. High *dietary* fat is only roughly followed by higher lipoids.
16. With *acidosis* the lipoids are above the level in diabetes without acidosis. The rise is about twice as great in *moderate* as in severe acidosis. This paradox may be related to the frequent finding that acidosis is most marked in acute cases, which presumably have not yet had time to pile up excess fat.
17. With increasing *carbohydrate balance* the lipoids decrease.
18. *Hyperglycemia* is only roughly accompanied by hyperlipemia. The latter, furthermore, runs much more closely parallel to the patient's general condition, and promises, therefore, to displace blood sugar from its present position as an index to prognosis and treatment.
19. When lipoids are high, the *percentage of corpuscles* in whole blood is apt to be either abnormally low or abnormally high. The general diabetic average is below normal.
20. The term "lipemia" is loose and therefore undesirable. *Hyperlipemia* (supernormal lipoids) is not paralleled by *lactescence* (cloudy plasma), except when extreme. When, however, the lipoids are only moderately supernormal (as is true in 93% of the specimens in this series), then the plasma cloudiness is by no means proportional. This series shows clear plasmas, which, when tested, were found hyperlipemic, and cloudy plasmas which were found to have normal lipoids.

Medical Progress.

PROGRESS IN PEDIATRICS. A RÉSUMÉ OF THE LITERATURE OF INFANTILE SCURVY DURING THE PAST FIVE YEARS.

By John Lovett Morse, A.M., M.D., Boston.

Symptomatology.

Hess (*Jour. Amer. Med. Assn.,* 1915, Vol. lxv, p, 1003) in 1915 called attention to enlargement of the heart, especially to the right, in infantile scurvy. This enlargement is demonstrable both by percussion and by the roentgen ray. Necropsies show that the enlargement is sometimes due to dilatation and sometimes to hypertrophy, but more often to dilatation. The enlargement is chiefly of the right ventricle. The rate of the pulse is also increased.

He also states that subcutaneous edema is one of the most constant phenomena of infantile scurvy. It deserves special mention because it appears in a peculiar clinical form and is frequently one of the earliest indications of threatening scurvy. It appears first in the eyelids, especially the upper. It often manifests itself as a firm edema over the lower end of the tibia, infiltrating the skin, and is easily overlooked, as it does not pit on pressure. The edema is due to a nutritional disturbance of the smaller vessels and may also infiltrate the muscles

When this occurs in the thigh and causes swelling, it may be mistaken for subperiosteal hemorrhage.

He believes that the nervous system is also involved, because of the superficial tenderness in the extremities, the exaggeration of the knee-jerks and a neuro-edema of the optic discs, which are present in many cases.

In the course of his studies of a series of cases of scurvy at the New York Hebrew Infant Asylum Hess also found (*Amer. Jour. Dis. of Children,* 1916, Vol. xii, p. 152) that growth, in both length and weight, is markedly affected in the development of infantile scurvy. There is a cessation of growth, and a stationary plane is maintained for weeks or months. Supergrowth occurs when an antiscorbutic is added to the food. The cessation of growth in length shows a much greater disturbance of metabolism and nutrition than does that in weight, because simple malnutrition does not affect this function either in infants or young animals.

In a still more recent paper Hess (*Jour. Amer. Med. Assn.,* 1917, Vol. lxviii, p. 235) describes a cardiorespiratory syndrome, which often develops early. The pulse and respiration are decidedly increased in rate, but there is no discomfort. There is polypnea rather than dyspnea. Cardiographic tracings show a simple tachycardia, with at times an exceptionally tall T-wave. The fact that the rate of the respiration is increased, as well as that of the pulse, shows that the symptoms cannot be due to an alteration in the heart muscle. They must be due to a disturbance of the nervous mechanism controlling this dual symptom, probably to an involvement of the pneumogastric nerve.

He also emphasizes the fact that scurvy presents many symptoms before the development of the florid stage. He describes three stages of scurvy: the latent, the subacute and the florid. The symptoms of the latent stage are stationary weight, pallor, anorexia, edema, exaggerated knee-jerks and the cardio-respiratory syndrome. In the subacute stage the symptoms of the latent stage are more marked, and enlargement of heart, irritability, slight redness of the gums and slight tenderness of the extremities develop, while the urine often contains a little albumen and blood. The symptoms of the florid stage are of the well-known hemorrhagic type with which all are familiar. The latent and subacute stages often pass unrecognized and are cured by the accidental administration of some antiscorbutic before the florid develops.

Pathology.

Hess and Fish (*Amer. Jour. Dis. of Children,* 1914, Vol. viii, p. 385) have recently made a study of the blood in this disease to determine the cause of the hemorrhages. They found that the clotting power of the blood in scurvy was, as a rule, slightly diminished. This diminution was not, however, constant, and cannot, therefore, be regarded as an essential manifestation of the disease or sufficient to account for the hemorrhagic tendency so characteristic of it. They found that there was no deficiency of calcium or blood platelets and no excess of antithrombin. They then studied the blood vessels by means of what they term the "capillary resistance test" and found that there was a weakness of the vessel walls in scurvy. This weakness is also present in other conditions than scurvy and is, therefore, not pathognomonic of it. It seems evident from their work, however, that the hemorrhagic tendency in scurvy is due to a weakness of the vessel wall rather than any change in the blood.

Nobécourt, Tixier and Maillet (*Archiv. d. Méd. d. Enfants,* 1913, Vol. xvi, p. 241) made a study of the blood in two cases and found anemia with leukocytosis. There was no rule evident, however, as to the relative proportions of the different forms of white cells. They call attention to a myeloid reaction of the blood, shown by the presence of both basophilic and neutrophilic myelocytes, which they attribute to an intense, plastic medullary reaction.

Bahrdt and Edelstein (*Ztschr. f. Kinderheilk.,* 1913, Vol. ix, p. 415, and 1914, Vol. x, p. 352) analyzed the organs of an eight-months-old baby, dead of scurvy, which showed no evidences of rickets. The ash of the bones was much less than normal. They contained from one-fifth to one-third of the normal amount of calcium, and there was a corresponding diminution in the phosphorus. The sodium and potassium were somewhat increased. There was also a diminution in the amount of calcium in the muscles. The salts in the other organs were apparently normal.

Etiology.

Lane-Claypon (Reports to the Local Government Board on Public Health, 1912, New Series, No. 63) gave a careful review of the literature regarding the effect of the heating of milk on the production of infantile scurvy in 1912. Morse (Boston Medical and Surgical Journal, 1914, Vol. clxx, p. 504, and *Trans. Amer. Ped. Soc.,* 1914, Vol. xxvi, p. 61) called attention to the rapid increase in the number of cases of infantile scurvy treated in the Out-patient Department of the Boston Children's Hospital during the preceding six years, and the parallelism of this increase with that in the pasteurization of milk in Boston during this period. He did not claim that the pasteurization of the milk was the cause of the increase, but merely called attention to these figures as suggesting that it might be, and that it might, at last, play a part in the etiology of scurvy. In former years most of the babies which developed scurvy were fed on proprietary foods. In recent years the heating of foods prepared with milk was the most constant factor. Hess and Fish (*Amer. Jour. Dis. of Children,* 1914, Vol. viii, p. 385) stated in 1914 that during the past three years a considerable number of cases of scurvy had developed at the New York Hebrew Infant Asylum in babies fed on pasteurized milk. In 1912, when the first cases were noted, the food was heated at 165° F. for twenty minutes. At this time several cases developed, owing to the fact that through an oversight orange juice was not given. Since then the milk has been heated at 145° F. for thirty minutes. Nevertheless, several cases of scurvy developed on this diet, orange juice having been omitted for experimental purposes. Others did not develop scurvy, although on the same diet. He concluded, therefore, that the pasteurized milk was not the sole factor in the production of the disease. That the pasteurization of the milk played an important part was shown, however, by the recovery of the babies when the pasteurization was stopped, the food otherwise remaining the same. Single cases of scurvy developing in babies fed on pasteurized or boiled milk have also been reported by several observers.

Hess and Fish (*loc. cit.*) state that their experience shows that the infectious diseases do not play an essential rôle in the production of infantile scurvy. They also state that almost all of the babies that developed scurvy showed evidences of the "exudative diathesis." The association was so evident that they have no hesitation in considering that there is a close inter-relationship between the two conditions. They believe that the "exudative diathesis" predisposes to the development of scurvy.

Talbot and Peterson, and Dodd, in their articles in THE BOSTON MEDICAL AND SURGICAL JOURNAL in 1913 (Vol. clxix, pp. 232 and 237) reviewed the literature of experimental scurvy in animals up to that time. Moore and Jackson (*Jour. Infec. Dis.*, 1916, Vol. xix, p. 478, and *Jour. Amer. Med. Assn.*, 1916, Vol. lxvii, 1931) have since then corroborated the findings of other observers, that inanition does not produce scurvy. They also found that cow's milk in any form, whether boiled, pasteurized or raw, not only does not cure scurvy in guinea pigs, but actually causes it. Condensed milk and mixtures of casein and water also caused it. So did Horlick's Malted Milk, Nestle's Food and Mellin's Food. The presence or absence of milk in these foods apparently made no difference. Goat's milk, however, did not cause it. They also determined by experiments that the lactose in milk is not the cause of scurvy in guinea pigs and that scurvy is not due to a lack of lime salts. They call attention to the facts that a diet which is sufficient for growth and maintenance in one species may be adequate for another, sufficient for maintenance in another, and produce one of the deficiency diseases in a third; and that conclusions based on dietary experiments on one species of animals can be applied only to that species. They state that their results show nothing to contradict the belief that milk carries both the fat-soluble and the water-soluble vitamins, but merely show that milk in every form lacks something which is necessary to the guinea pig.

Funk has recently called attention in his book (*"Die Vitamine,"* etc., Wiesbaden: J. F. Bergman, 1914) to the significance of the so-called vitamins in physiology and pathology, especially in relation to the etiology of what he calls the "avitaminoses," namely, beriberi, scorbutus, pellagra and rickets. He believes, and advances strong evidence to prove, that these diseases are due to the absence of certain vital substances in the food, that is, the vitamins. He shows from his own work and that of others that milk contains a considerable number of these antiscorbutic substances as well as a substance which materially favors the growth of young animals. The development of scurvy in infants taking foods which contain no milk may be explained, therefore, by assuming that these foods do not contain the essential vitamins which milk does contain. The vitamins are, in general, very sensitive to heat. Those in milk are relatively stable. They are, however, partly destroyed by heating milk for a short time, and totally destroyed by long heating or sterilization. The development of scurvy in babies taking heated milk, and the greater frequency of the disease when the food is boiled or sterilized than when it is pasteurized, may be explained by assuming that the vitamins are partly or wholly destroyed by the heating, the destruction being more or less complete, according to the degree and duration of the heating. Scurvy sometimes develops, however, in babies taking raw milk, or even in those that are on the breast. His explanation of the development of scurvy on a diet of raw milk is that in such instances the milk is deficient in vitamins. In support of this explanation he brings forward evidence to show that the amount of the vitamins in the milk varies with the amount of vitamins in the food of the cows. An example of the influence of the food of the cows upon the amount of vitamins in the milk is the fact that their milk contains less vitamins in the winter, when they are eating dry food, than in the summer, when they are eating green food. The development of scurvy in infants on the breast may be explained in a similar way. He calls attention to the fact, moreover, that the vitamins are diminished in the milk of women who are underfed.

Hess (*Jour. Amer. Med. Assn.*, 1915, Vol. lxv, p. 1003) calls attention to the fact that enlargement of the heart, edema and nerve degeneration, which occur in scurvy, are prominent symptoms in beriberi, which is, without question, a deficiency disease, and considers it a strong argument that scurvy is also a member of this group. The improvement of babies with scurvy when wheat middlings are added to the diet he considers further proof.

McCollum and Davis (*Jour. Biol. Chem.*, 1915, Vol. xxiii, p. 181) concluded, from their studies of rats which failed to grow and live on diets composed of purified food elements, that there were lacking in such food mixtures two essential substances or groups of substances. McCollum and Kennedy (*Jour. Biol. Chem.*, 1916, Vol. xxiv, p. 491) think that the term "vitamins" does not accurately describe these substances, and propose the terms "fat-soluble A" and "water-soluble B" for them. The first is found in abundance in butter-fat and egg-fat, and the latter in the leaves of plants, but only to a small amount in their seeds.

McCollum and Pitz (*Jour. Biol. Chem.*, 1917, Vol. xxxi, p. 229) found, as did Jackson and Moore (*Jour. Infec. Dis.*, 1916, Vol. xix, p. 478, and *Jour. Amer. Med. Assn.*, 1916, Vol. lxvii, p. 1931), that the addition of milk to a diet of oats did not prevent the development of scurvy in guinea pigs, and conclude, therefore, that the lack of "fat-soluble A" cannot be the cause of scurvy. They also conclude, from a series of experiments on rats, that the "water-soluble B" must have been present in the oats. Therefore, they believe that scurvy in the guinea pig cannot be due to a lack of any specific substance of this class. Consequently they conclude that scurvy is not a deficiency disease in the sense in which the term has been recently used.

They found that in guinea pigs which died of scurvy on a diet of oats and milk, the stomach, small intestines and lower colon were empty, while the cecum was distended with putrefying feces. The cecum of the guinea pig is very large and delicate. They argue, therefore, as follows:

The guinea pig can thrive only on a diet which leads to the formation of bulky and easily eliminable feces. Diets such as oats do harm only in that they form pasty feces, which cannot be passed out of the delicate cecum. Putrefaction occurs, which injures the cecal wall, which allows the passage of bacteria or toxins, which by their action on the walls of the capillaries produce the characteristic symptoms of scurvy. They found, further, that the addition of laxatives to the food which produced scurvy prevented or delayed its development. They believe that orange juice does good simply because of its laxative action. They do not go so far as to claim that the cause of scurvy in infancy is colonic stasis, with the absorption of toxins or bacteria, but think that their experiments lend support to this belief. The chief objections to their arguments are that conclusions based on dietary experiments in one species of animals cannot be applied to others, or those on animals to man, that the infantile cecum is not especially large or delicate, and that laxatives do not cure scurvy in infants.

Jackson and Moody (*Jour. Infec. Dis.*, 1916, Vol. xix, p. 511) carried on some experiments to determine whether certain small stained bodies which were seen in the sections of the scorbutic lesions of the guinea pigs studied by Jackson and Moore (*loc. cit.*) were bacteria. They isolated a diplococcus of low virulence, with a tendency to form chains and to produce green on blood agar, from the crushed tissues of scurvy lesions. Pure strains of these organisms, when introduced into the circulation of guinea pigs and rabbits living under ordinary conditions and taking suitable diets, gave rise to hemorrhagic lesions in the bones, joints, muscles, lymph glands or gums. Bacteria resembling these organisms were frequently seen in the microscopic sections of the scorbutic lesions. Jackson and Moore (*loc. cit.*) found, however, that cultures from the heart's blood of guinea pigs ill with scurvy produced by a milk diet were sterile, and that the passage of blood from these animals to normal animals did not produce the disease. Furthermore, guinea pigs fed on broth cultures of hemolytic and green-growing streptococci did not develop any signs of scurvy. Jackson and Moody refrain from drawing any definite conclusions as to the etiological relations of the organisms which they found to scurvy. McCollum and Pitz (*loc. cit.*), however, use their results as strong arguments in favor of their own conception as to the etiology of scurvy.

Treatment.

Hess and Fish (*Amer. Jour. Dis. Children*, 1914, Vol. viii, p. 385) found, as have others, that the boiling of orange juice for five or ten minutes does not destroy its antiscorbutic qualities. They also found that the juice of orange peel is as efficacious as orange juice, and suggest that on account of its cheapness it be used instead of orange juice. They prepared the juice by adding one ounce of finely-grated orange peel to two ounces of water and sweetening it. They found that the administration of small amounts of cooked vegetables, mostly in the form of carrots, did not prevent the development of scurvy. Freise (*Monatschr. f. Kinderheilk.*, 1914. Vol. xii, p. 687), however, cured a case of infantile scurvy by the use of an alcoholic extract of beets, the diet remaining otherwise the same. Hess and Fish (*loc. cit.*) also obtained good results with potato, boiled and mashed. Potato flour, however, had no antiscorbutic action. They recommend the use of potato water, made by adding one tablespoonful of boiled and mashed potato to a pint of water, in place of barley or other cereal waters. The potato water is inexpensive, the starch in it has the same colloidal action as that in the cereal waters, and it acts as an antiscorbutic, which the others do not. They found, as have others, that cod-liver oil and olive oil neither cure nor prevent the development of scurvy.

Hess (*Jour. Amer. Med. Assn.*, 1915, Vol. lxv, p. 1003) tried adding wheat middlings to the food on account of the similarity of many of the symptoms of scurvy to those of beriberi. They had a slight, but, compared with orange juice and potato, unimportant antiscorbutic action. He also gave wheat germ both as a cereal and as a watery extract (*Amer. Jour. Dis. of Children*, 1917, Vol. xiii, p. 98). They had some antiscorbutic power, but not enough to make them of value from either a practical or clinical standpoint. He also tried autolyzed yeast and a desiccated yeast powder, because of the resemblance between the symptoms of scurvy and beriberi. Yeast proved to be of no value, however, either as a prophylactic or curative agent, but showed itself to be a stimulant to growth.

Rueck (*N. Y. Med. Record*, 1917, Vol. xci, p. 152) treated a very marked case of scurvy, with bleeding gums and marked anorexia, by two transfusions of human blood. The bleeding stopped and the appetite improved. He thinks that the blood served as a food in itself, helped to digest the food which the baby took and stimulated the hematogenetic centers to assume their normal functions. He also gave the baby modified milk, but does not state its composition, or whether it was given raw or heated. He began to give orange juice ten days after the first transfusion.

Since this article was written Hess has published another paper (*Amer. Jour. Dis. of Children*, 1917, Vol. xiv, p. 337) in which he concludes from a further study of the records of the cases on which he based his previous papers that aging of the milk seemed to play a greater rôle in the production of scurvy than heating, whether the milk was pasteurized or raised to the boiling point. He states that even raw milk on aging loses its antiscorbutic properties. In this paper he revises most of the opinions and conclusions given in his previous papers, and states that infantile scurvy is not a simple dietary disease but an intestinal intoxication or an autointoxication due to the overgrowth of harmful bacteria in the intestine. He states that it is the product of an unbalanced flora which is no longer controlled by a proper dietary. He thinks that the kidneys play a considerable rôle in infantile scurvy, and that its clinical course depends to some extent on the activity of their functions, toxins being eliminated by this route. He apparently now believes that the curative action of orange juice is due to its influence on the intestinal flora and its diuretic effect. His change of mind is seemingly largely due to the work of Jackson and McCollum and their associates, which has been cited in the previous paragraphs. In the reviewer's opinion his arguments are unconvincing and his conclusions not justified by the data on which they are based.

* * *

MEDICAL BEQUESTS.—The will of the late Mrs. Charles H. Colburn, of Milford, Mass., who died recently in Paris, was filed at Worcester, Mass., on Jan. 24. It contains a bequest of $20.000 to the Milford Hospital, and establishes a fund of $100,000 at the Harvard Medical School for research in tuberculosis.

Book Reviews.

Kirk's Handbook of Physiology. With American Revision. By CHARLES W. GREENE, A.M., Ph.D. New York: William Wood & Company. 1917.

This revision of a well-known physiology leaves the book still in that group of texts which present the subject from the structural point of view. Each division is introduced by extensive and well illustrated histological accounts of the tissues involved. There is no doubt that such presentation is necessary for elementary teaching, but in medical school physiology and for graduate reference, it is of very questionable value, since the reader in both these instances obtains his anatomical information from more complete sources.

In the presentation of the actual physiological material, Professor Greene has maintained a simplicity and directness which is admirable. Criticism cannot treat so much the material presented, as it can the very obvious omissions. A text for medical school use which contains no mention of electrocardiography, no explanation of the typical electrocardiogram, material so easily and profitably introduced in discussing the spread of the contractile disturbance in the heart, can hardly be adequate. Other vital omissions occur in the very incomplete character of the discussion of the electrical changes involved in muscular contraction and the passage of the nerve impulse, and in the absence of mention of the venous pulse. It is needless to cite further similar defects which express the sacrifice one must make in presenting a histological type of physiology. It is very doubtful whether such texts can continue in medical school use, since they provide too unsubstantial a foundation for modern clinical medicine and surgery.

Diseases of the Skin. By RICHARD L. SUTTON, M.D., Professor of Diseases of the Skin, University of Kansas School of Medicine, etc. With 833 Illustrations and 8 Colored Plates. Second edition. Revised and enlarged. St. Louis: C. V. Mosby Company. 1917.

The excellence of Sutton's textbook on Dermatology was emphasized in these columns at the time of the appearance of the first edition. This second edition has offered the author an opportunity to "supply supplemental matter in a few instances, as well as to cover the important literature for the entire year 1916, and to eliminate a number of typographic and other minor errors." Gangrenous Balanitis, Atrophy of the Mucous Membranes of the Tongue and Mouth, and Atrophy of the Fatty Layer of the Skin, are the principal new topics discussed. 140 new illustrations have been added.

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MILITARY ANTI-TUBERCULOSIS PROGRAM PERFECTED.

Plans for a complete program for the Prevention of Tuberculosis in the Army have been perfected by the National Association for the Study and Prevention of Tuberculosis, working in coöperation with the Surgeon-General, the Y.M.C.A., and other agencies. This, it is predicted, will put the impending second draft on a better health basis than the first. The program will include, not only a follow-up for every man discharged on account of tuberculosis, but a thorough-going health educational campaign among the soldiers.

Prior to the first draft, the National Association began to outline a preventive campaign. Owing to the magnitude of the task and the many practical delays in perfecting and applying the details of this scheme, the results were not as encouraging as might be expected. This was due to the fact that the report of names of men rejected by the draft on account of tuberculosis was inadequate, the slowness of the machinery in getting under way, and the many difficulties in determining the status of the men.

Inasmuch as these enlisted or drafted men do not become accepted soldiers until after their probationary period, lasting from three to six months in the various services, the Government assumes no responsibility for the after-care of those whose health breaks down during that period. Hence, this problem belongs to the civilian boards of health and the unofficial health organizations.

The National Association program falls into two main divisions: (*a*) follow-up work, and (*b*) educational work. The first obstacle to the follow-up program was Section Eleven of the Selective Service Regulations regarding the second draft, which forbids giving a record of a man's condition to any one except certain designated officials. The National Association officers, however, placed before the War Department the importance of this work, and were influential in persuading them to open the records of rejected men to state and local boards of health throughout the country, through the United States Public Health Service and the Council of National Defense.

Inasmuch as the above section of the regulations does not apply to men dismissed from training camps after they have passed draft boards, the Association arranged with the Surgeon-General and the division surgeons in camps to receive the names of all men thus dismissed. These lists are divided up by states and forwarded to state associations and state boards of health, for follow-up work. Where men are referred to localities where there are not at present facilities for this follow-up work, the Association will use its good offices to promote the establishing of such facilities.

In the meantime, the Medical Department of the Army has perfected its machinery for weeding out these tuberculosis cases. Every man passed by the draft board, after going into camp is examined by the regimental surgeon, re-examined by a tuberculosis board, and then, if suspected of tuberculosis, again examined by a tuberculosis expert. This follows a general policy mapped out and recommended by the National Association.

A large number of men have already been accepted into the service who were known to be tuberculous, many of them formerly inmates of tuberculosis sanatoria. Part of the Association's work has been to get in touch with every tuberculosis sanatorium and dispensary in the country and compile lists of all recent male inmates of draft age, giving the history of their cases, and whether or not it was known if they were in the army at present. Hundreds of such names have already been received. These data are forwarded to the training camps, the men are located, and the results are reported back to the sources of information.

Furthermore, the Association has sent a letter to all of its fifteen hundred local coöperating agencies, giving the provisions of the second draft and urging that these agencies procure the names and addresses of all the men of military age in their section who are known to have tuberculosis; get in touch with these men, and arm them with the necessary affidavits to prevent, if possible, their being passed by the draft board, and recommend to the local draft boards the names of the approved tuberculosis experts in their section.

The Association is also coöperating with the Surgeon-General's office to aid the Government in providing sanatoria for those men who have been discharged from the service on account of tuberculosis after their probationary period has expired. All full-fledged soldiers and sailors returned from France or other stations will be cared for as near to their own homes as possible, in sanatoria accommodations provided by the Government. The Government intends to utilize, as far as possible, existing institutions.

From the United States Marine Corps, the National Association has secured each month a report of men rejected for tuberculosis from all its recruiting stations, and these men will receive the regular follow-up attention.

From the second, or educational, division of the program, it is hoped to derive the greater ultimate good by the establishment of fundamental preventive measures among the well.

The National Association is interested in any kind of educational campaign among the men in the various military camps that will tend to promote interest and information with regard to the control and prevention of communicable diseases, and toward the promotion of public and individual health in general. In the mobilization of such large numbers of men in various camps throughout the United States, there have developed an unusual number of somewhat serious epidemics of colds, coughs, pneumonia, measles and various other respiratory and communicable diseases. That all these diseases can be controlled by education and by the exercise of adequate public health measures has been clearly demonstrated in the civilian population throughout the United States. Most of these epidemics are spread through ignorance and carelessness. It is inevitable where large numbers of men from all walks of life, and with all possible diseases and variations of physical habits, are thrown together in somewhat uncomfortable and crowded living conditions, that there will be an immediate increase in the amount of sickness from communicable diseases. It must be obvious, however, to even the most superficial observer, that if these men can be taught to maintain a reasonable standard of personal hygiene, and can be given a knowledge of the methods and principles of the control of communicable diseases, a rapid diminution in the sickness rate will follow.

In coöperation with the Educational Committee of the National War Work Council of the Y. M. C. A., the National Association will furnish a number of stock lectures dealing with tuberculosis, together with lantern slides to illustrate them. It will also arrange to put the educational secretaries of each of the camps in touch with public lecturers in and around their respective camps. The Association has requested the War Department to give careful consideration to the desirability of appointing one or more special officers detailed to lecture on tuberculosis and allied health subjects in all the army camps throughout the country.

The Association has prepared a special circular entitled, "Red Blood," giving in brief and attractive form a message to the soldier relative to personal fitness. A health "Don't Card" and a Public Health Manual may also be distributed, the latter being a text-book of personal hygiene.

The Association will also arrange to distribute, through the departmental executives of the Y. M. C. A., a number of special tuberculosis exhibits known popularly as "The Parcel Post Exhibit." In connection with these, moving picture films and lantern slides will be used.

The National Association Field Secretary, Dr. Pattison, is visiting the training camps and supervising this educational work.

PHILIP P. JACOBS,
Assistant Secretary National Association for the Study and Prevention of Tuberculosis.

MASSACHUSETTS SOCIETY FOR MENTAL HYGIENE.

In a recent issue of the JOURNAL we made editorial comment upon the latest meeting of the Massachusetts Society for Mental Hygiene, which was held in Boston, on the general subject of shell shock. The Massachusetts Society for Mental Hygiene has now become a well-established and recognized organization, and has already accomplished work of a considerable amount of value. As an indication of the character of this work may be mentioned its publications, eleven in number, which include articles on Psychopathic Hospitals and Prophylaxis, by Dr. Frankwood E. Williams; on The Menace of Syphilis to the Clean-Living Public, by Dr. J. Harper Blaisdell; on The Burden of Feeble-Mindedness, by Dr. Walter E. Fernald; on The Relation of Syphilis to Mental Disease, by Dr. Samuel T. Orton; and on The After-Care of Mental Patients, by Dr. Henry P. Frost. The Society also has a corps of about thirty speakers, men and women, who are authorities on the various phases of mental hygiene, who will, without charge, deliver public addresses on such subjects as the following: Preventable Psychoses and How to Prevent Them, by Dr. E. Stanley Abbott; Mental Disease and Crime, by Dr. V. V. Anderson; The Defective Child and the Schools, by Miss Frances E. Cheney; The Practical Phases of Inebriety, by Dr. Irwin H. Neff; and Mental Pitfalls of Adolescence, by Dr. Henry A. Stedman.

The Society, as an agency of preventive medicine, merits professional recognition for the work which it has already accomplished, and should be able to go on to accomplish still more of value as its methods become developed.

* * *

WAR-RISK INSURANCE.

In last week's issue of the JOURNAL appeared an editorial on War-Risk Insurance. In this editorial, statement was made that this insurance covered partial as well as total disability. Further information from the director of the Bureau of War-Risk Insurance now states that this is incorrect. War-risk insurance covers only total and permanent disability. No provision is made for payment of partial disability.

MEDICAL NOTES.

DECLINE OF GERMAN BIRTH RATE.—A report from Germany states that the rapid decline in birth rate is causing serious anxiety throughout the country. While this decline was, of course anticipated as a direct outcome of war conditions, it is now felt necessary to take direct measures to offset this state of affairs.

"The falling-off of the birth rate is greater in large towns. It is very noticeable, for example, at Dresden, where, in 1903, the number of deaths was 8570; in 1913, 7329; in 1915, 6406. In the years mentioned, the number of births was 15,423, 11,297, 7371, respectively. As rate of mortality does not decline to the same extent, the marked decline in excess of births over deaths necessarily makes itself evident by the number of births in excess of deaths. This fell from 6853 in 1903, to 965 in 1915. There is no doubt the figures of 1916 and 1917 would show a much greater decline. In consequence of this, the greater efforts are being made in Dresden to foster infant life by classes of society who took no interest in such matters before the war.

It would be easy to prove by the examination of statistics of other German towns that what is happening in Dresden is happening elsewhere. Prussia and central Germany are the only places where the decline in the birth rate is less ominous and occurs in places where strong religious influences exist to combat it, as, for example, in the Roman Catholic districts of west Germany, where the population is largely of this faith. Naturally, the hard winter is having a disastrous effect on the population as regards elderly people enfeebled for want of adequate food."

WAR NOTES.

MORE NURSES FOR WAR.—The American Red Cross has announced that it will require the enlistment of 30,000 more nurses if the prospective needs of the Government are to be met. In order to meet the increasing demands of the Army and Navy Nurse Corps, the Red Cross has modified somewhat its former requirements for enrolment. The age-limit has been lowered to twenty-one years, and in special cases nurses over forty may be accepted. Smaller schools for nurses have been placed on the accredited list, and applicants are judged on their merits.

MEDICAL ADVISORY BOARDS.—The following men have been appointed to serve on the Medical Advisory Board for the Winthrop and Boston division, under the Selective Service Law. They are: Dr. Charles L. Scudder, chairman. Dr. Frederick T. Lord, Dr. J. Homer Wright, Dr. Alex. Quackenboss, Dr. E. W. Taylor, Dr Eugene A. Crockett, Dr. George W. Holmes, Dr. W. E. Boardman, and Dr. James I. McLaughlin. Those who will serve on the board for the Boston and Brookline division are Dr. Henry L. Houghton, chairman, Dr. George B. Rice, Dr. Gardner H. Osgood, Dr. F. W. Coburn, Dr. John H. Payne, Dr. Alonzo G. Howard, Dr. J. Emmons Briggs, Dr. F. C. Richardson, and Dr. W. H. Eaton. Those who will serve on the board for the Milton and Boston divisions are Dr. Henry Jackson, chairman, Dr. F. H. Leahy, Dr. Joshua C. Hubbard, Dr. E. R. Williams, Dr. W. J. Daly, Dr. Harold Walker, and Dr. L. M. S. Miner. The local examination boards for districts in the vicinity of Boston will have their headquarters in the following places:

District 22—Cable Memorial Hospital, Ipswich.
District 25—Addison Gilbert Hospital, Gloucester.
District 26—Beverly Hospital Corporation, Beverly.
District 27—Reading State Sanatorium, Reading.
District 28—Josiah B. Thomas Hospital, Peabody.
District 29—Salem Hospital, Salem.
District 30—Lynn Hospital, Lynn.
District 31—Melrose Hospital, Melrose.
District 32—Charles Choate Memorial Hospital, Woburn.
District 33—Deaconess Hospital, Concord.
District 34—Winchester Hospital, Winchester.
District 35—Malden Hospital, Malden.
District 36—Sims Arlington Hospital, Arlington.
District 37—Waltham Hospital, Waltham.
District 38—Somerville Hospital, Somerville.
District 39—Cambridge Hospital, Cambridge.
District 40—Newton Hospital, Newton.
District 41—Boston City Hospital, Boston.
District 41—Massachusetts General Hospital, Boston.
District 42—Framingham Hospital, Framingham.
District 43—Quincy City Hospital, Quincy
District 44—Norwood Hospital, Norwood.
District 45—Canton Nursing Association, Canton.
District 46—Brockton Hospital, Brockton.
District 47—Sturdy Memorial Hospital, Attleboro.
District 48—Jordan Hospital, Plymouth.
District 49—Morton Hospital, Taunton.
District 50—Union Hospital and City Hospital, Fall River.
District 51—St. Luke's Hospital, New Bedford.
District 52—Yarmouth Junction Hospital.
District 53—United States Marine Hospital, Oak Bluffs.

Health at Army Camps.—Report of the week ended January 11 of health conditions at the National Guard and National Army camps states that among the 235 deaths, 149 were caused by pneumonia. Eighty-eight guardsmen died during the week, as compared with 109 the week before, and 147 National Army men, as against 167 the previous week.

"Both the hospital admission and non-effective rates in the Guard and National Army camps increased during the week, with pneumonia generally prevalent. Among the Guardsmen there were 342 new cases of pneumonia, and in the National Army 340. The meningitis situation continued to improve, both in the Guards and National Army, while measles continued to decline in most of the camps. Epidemics of German measles and mumps prevailed in many camps, with scarlet fever increasing in the National Army and decreasing in the National Guard."

BOSTON AND MASSACHUSETTS.

Infantile Paralysis Clinic.—The splendid work which has been carried on by the Harvard Infantile Paralysis Commission in treating children who have been victims of this dreaded disease merits a cordial and generous support, not only from those so afflicted, but from public-spirited people generally.

"Statistics given out yesterday show that 1118 children were examined at the Commission's clinics during the year ending Nov. 20, 1917. Of these, 402 had infantile paralysis prior to 1916, 670 during 1916, and 46 during 1917. The cases which are being followed up at the homes by the orthopedic nurses number 645; by the state field workers of the Commission, 520; and by the Boston Instructive District Nursing Association for the Commission, 125.

State clinics were held at Springfield, Newburyport, Haverhill, Lowell, Lawrence, Quincy, Malden, Melrose, Worcester, Greenfield, North Adams, Beverly and Lynn, with a total attendance of 956. There were 155 clinics at the Children's Hospital, Boston, with a total attendance of 3889."

The Commission, however, is sadly lacking in the necessary funds to carry on its work. Any curtailment of its work would be a public calamity, and, therefore, an appeal is being sent out over the State to raise a fund of $18,000. Checks may be sent to the Commission, in care of Kidder, Peabody and Company. Boston.

Framingham Health Conference.—The quarterly meeting of the National Committee in charge of the Framingham health demonstration was held on January 17. Dr. Baldwin of Saranac Lake presided and Dr. Hatfield of Philadelphia was secretary. Other well-known men who attended the meeting were Dr. Frankel, of New York City; Dr. Kelley, of Massachusetts State Department of Health; Dr. Mahar, of Connecticut; and Dr. Smith, of the United States Public Health Service. Dr. Donald B. Armstrong reported the progress of the work in making a second medical examination of more than five hundred families.

Week's Death Rate in Boston.—During the week ending Jan. 19, 1918, the number of deaths reported was 306, against 294 last year, with a rate of 20.34, against 19.85 last year. There were 35 deaths under one year of age, against 33 last year.

The number of cases of principal reportable diseases were: diphtheria, 69; scarlet fever, 42; measles, 108; whooping cough, 76; typhoid fever, 1; tuberculosis, 28.

Included in the above were the following cases of non-residents: diphtheria, 5; scarlet fever, 7; tuberculosis, 1.

Total deaths from these diseases were: diphtheria, 4; measles, 4; whooping cough, 2; tuberculosis, 26.

Included in the above were the following non-residents: diphtheria, 2; tuberculosis, 1.

Emergency Hospital of State Guard.—Plans for the equipment of a hospital of 440 beds, under the jurisdiction of the State Guard, are well under way. The Executive Council has appropriated $50,000, and Commonwealth Armory will be utilized for the storage of the equipment, and the great drill shed will be the location of the hospital should a need for it arise. The hospital will have a complete modern operating room with x-ray apparatus and sterilizing room. The personnel of the hospital force, under Colonel Brooks, numbers 72 officers and 173 men, already trained for the work.

Opposition to Health Insurance.—The report of the special commission appointed to consider social insurance problems opposes the establishment of a State system of compulsory health insurance. A minority report, however, recommends the appointment of a special commission of five to devote two years' study to the matter. Another minority report recommends extension of medical care of school children.

Among other things, the report of the majority makes this statement:

"The real solution of the health question, it seems, is not indemnification for wage loss during illness, but prevention of illness. To cope intelligently with the sickness problem, therefore, our energies should be directed to making possible the extension and greater efficacy of our preventive work. Since the maintenance of a high standard of public health through the prevention of illness, is more desirable than the *post facto* treatment of disease, the majority believe it would be wiser under the present circumstances to follow a constructive policy of preventive medicine than to initiate any compulsory scheme of health insurance.

After serious consideration of the evidence submitted at the various hearings and of the several studies undertaken in its behalf, the majority has reached its conclusions, and does not feel justified in recommending a bill to establish a system of State health insurance within the Commonwealth.

In connection with its recommendations for the extension of existing voluntary agencies in the State, the report of the majority states that 'as a means of relieving the burden which illness often imposes on those of limited means, the majority of the commission submits recommendations and legislation which it believes will result in the extension and more effective administration of existing voluntary agencies in the Commonwealth. It is our opinion that an ultimate solution of the sickness indemnity question may be partly reached, at least, through the growth and development of voluntary industrial mutual benefit associations now in operation.'

In analyzing the evidence submitted to the commission and the summary of hearings presented at the beginning of its report, the report reads: 'The so-called compulsory contributory system of health insurance has few supporters. There appear to be two serious obstacles to the enactment of legislation of this character, namely, the united opposition of employer and employee to the plan, and the difficulties presented by the constitutional aspects of the question.'

The enactment of a compulsory health insurance law would be in the nature of class legislation, the majority believes. 'We cannot disregard the objection put forward by labor bodies and others,' the report says, 'that compulsory contributory health insurance is class legislation—inasmuch as it taxes one class of citizens,—the inherently healthy—for the benefit of the smaller, but less fortunate, group on which the burden of illness falls.'

The report of the minority members takes issue with that of the majority members at many points. 'Health insurance legislation,' it states, 'may be halted temporarily by the war, but the ultimate acceptance of it seems to us to be beyond question. . . A shortage of labor, due in part to the drafting of a great body of our young men for the National Army and the cessation of immigration, makes it necessary for a great number of workers to labor long hours and under high tension. European countries are awaking to the fact that their workers must be provided for after the war. The American workmen are already asking what the Government is going to do for them after the war. Thus it would seem to us that the war could be an added argument for health legislation rather than for delay.'

Continuing, the report of the minority states: 'In the very limited time, however, in which the Commission has had to consider the question, the minority feel that sufficient evidence and proof have already been presented to show the vital need of sickness insurance as a means of relief to the overburdened wage-earners in the Commonwealth. While the minority refrain at this time from submitting a bill establishing health insurance because we have realized some of the difficulties involved in enacting a measure of such great importance, however, we are thoroughly convinced that a system of non-contributory health insurance is the only solution of the problem of sickness and its contingencies. The principle of non-contributory health insurance appeals to us by far the eminently fair and correct means of solving the problem.'

In recommending further study of the question, the minority says it is submitting a bill to the Legislature providing for the appointment by the governor of a commission of five persons, one of whom shall be a representative of labor, for a period of two years, in which to investigate the question. An appropriation of $25,000 is asked for the commission."

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Miscellany.

RESOLUTIONS ON THE DEATH OF MR. RUETER.*

CONRAD JOHN RUETER, son of Henry Herman and Mary Emily (Domansky) Rueter, was born in Roxbury, Massachusetts, September 26, 1863, and died in Boston, December 18, 1917.

Mr. Rueter graduated from the Roxbury Latin School in 1880, and from Harvard College in the Class of 1884. He studied one year in the Harvard Law School, and another at the Boston University Law School; he was admitted to the Suffolk Bar in July, 1886. In August of the same year he went to Germany to familiarize himself with other systems of jurisprudence, and studied particularly Roman law, at Bonn. He returned to Boston late in 1887 and began the active practice of his profession at 23 Court Street.

While at Cambridge he was a faithful student, receiving his bachelor degree *cum laude,* and an honorable mention in English composition. While an undergraduate he joined the Everett Athenaeum and the Pi Eta Society, and was also a member of the Varsity lacrosse team at a time when Harvard was a leader in this branch of sport.

In 1896 Mayor Quincy appointed him trustee of the Boston City Hospital, a position which he continued to occupy during his life. From May, 1896, to May, 1912, he was secretary of the board.

In 1892 he married Miss Louise Ramseyer, who died without children; he married his former wife's sister Helen in April, 1904; two sons survive him.

During his college course Mr. Rueter was quiet, industrious and earnest; work and play he undertook in the same simple and direct manner; he was, for instance, a thoroughly reliable and effective lacrosse player; and his record in study, alluded to above, shows many of the same characteristics.

Throughout his later life the qualities of his youth and early manhood were equally conspicuous. He was an efficient and conscientious trustee of this hospital; constant in attendance at the many board meetings; careful and thorough in his duties as its secretary; advocating and working steadily for those things which he believed to be of real value to the hospital, and utilized his legal training as an added factor in the worth of his work.

The senior staff expresses its sincere sorrow for his loss; it is a melancholy fact that, in spite of the skill of its surgeons and the care of its nurses, he died under the roof of the hospital he had served so long.

The staff also desires to place on record its thorough appreciation of the work he has done for the welfare of this institution,—work not yet completed when it was so abruptly ended by his too early death.

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INSTRUCTIVE DISTRICT NURSING ASSOCIATION.

THE Instructive District Nursing Association makes public a report of its work during the summer.

Its main contribution to the war has been to allow Miss Beard to spend a large amount of her time on various war committees. She is now serving on the Committee on Child Conservation of the State Department of Health; she is chairman of the Child Welfare Section of the Woman's Council of Defense of Massachusetts, and is on the section of that council which deals with nursing problems, and she is serving on three committees of the Council of National Defense: General Blue's Sub-Committee on Public Health Nursing, of which she is chairman, the Committee on Nursing of the General Medical Board, and the Committee on Home Nursing of Mr. Gompers' Committee on Labor. Her work on these committees and as President of the National Organization for Public Health Nursing, has made it necessary for her to spend a good deal of time in Washington and New York.

Two of its best nurses have positions as Child Welfare Supervisors, under the Committee on Child Conservation of the State Department of Health, and one of its best supervisors has left to work with the Red Cross. Miss Peabody, one of its vice-presidents, is vice-chairman of the State Committee on Child Conservation.

The increase in its work for the first six months of the year was unprecedented. This naturally has made it imperative to increase the number of the staff, and with the students, there are 101 nurses now working for the association. Miss Strong, the head of the educational department, who is in charge of the course in Public Health Nursing at Simmons College, has 10 students taking the eight months' course, and

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* Adopted at the meeting of the Senior Staff, Boston City Hospital, January 11, 1918.

25 taking the four months' course with the association, a larger number than ever before. Interest in public health nursing, instead of lagging behind, has been immensely increased, owing to the change of attitude of the Red Cross in regard to keeping public health nurses at public health work,—a policy which the Red Cross has now recognized as of great importance.

The association is continuing to take charge of all the patients in Boston given to it by the Harvard Commission on Infantile Paralysis. Unfortunately, because of the Harvard Commission's lack of funds, it is incumbent upon the association to raise the money for the extra expense of the work done by its nurses with paralyzed children.

The Health Center experiment in Hyde Park is developing well, and a contribution of $2400, from the Permanent Charity Fund of the Safety Deposit and Trust Company will permit further development by means of the addition of a dental clinic. By means of another $2400 given by the Permanent Charity Fund, it has been possible to establish a nurse at time of confinement in the Charlestown District, where the death rate of babies is astoundingly high.

A visiting housekeeper has been engaged, who will teach our patients how to plan and buy, and how to make the best use of food.

A press agent has secured for the association, greatly increased publicity in the Boston papers, and has prepared and sent out the first of a series of bulletins, which are to bring the work more graphically before the public.

* * *

RECONSTRUCTION AND RE-EDUCATION OF UNITED STATES SOLDIERS.

Joseph Colt Bloodgood, Chairman of Committee on Preparedness, Southern Medical Association, addresses the following letter:

To physicians and surgeons in industrial practice:

"I have received a large number of answers to the letters sent out dated September 10, 1917. These letters and personal conversation with physicians and surgeons in industrial practice seem to demonstrate that the number of cripples who need reconstruction and re-education is relatively so small, that even in large industries, it has not been considered of sufficient importance to develop the problem as will have to be done with the soldiers crippled in this war.

The Surgeon-General and the Department under Major Edgar King is preparing for the proper reconstruction and re-education of the crippled soldiers, but when this is accomplished, employment of some kind must be found for the soldier on his discharge, or the whole scheme fails.

The Government, naturally, must not only depend upon help in the re-education and reconstruction upon specially trained and qualified Medical Reserve Corps Officers, but upon the employers of labor in the great industries of this country, to find a job for which the crippled soldier has been re-educated and reconstructed.

It is my personal opinion that the problem is too large a one for any single industry to solve alone. The industries should combine as the railroads have combined in the settling of this very important war problem.

Although at the present time it is perhaps, one of the most difficult problems of the war, it is at the same time a peace problem.

In all the industries there must be many cripples in time of peace, who need reconstruction and re-education. For this reason, if the employers of labor coördinate with the Government now for the solution of this problem, they will establish and develop a scheme which can be utilized for the crippled men in industry in time of peace.

There is no doubt that 'safety first' has reduced the number of accidents. The improvement of first aid and its instruction, and the medical departments of the industries have greatly improved the results, but the question of re-education, especially for a better job, has not received the same consideration.

Please discuss this among yourselves and with the officers of your Company, and offer your combined advice and aid to the Surgeon-General of the United States Army and Navy."

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COLD-PACK CANNING AND BOTULISM.

THE United States Department of Agriculture authorizes the following statement:

Botulism, often called sausage poisoning, is a specific intoxication brought about by *Bacillus botulinus,* an organism isolated by Van Ermengen from insufficiently cooked sausages which had caused a severe outbreak of food poisoning in Belgium in 1895. The symptoms (nausea, gastric pains, visual disturbances, muscular weakness, etc.) are caused by a definite toxin or poison produced by the *Bacillus botulinus* outside of the body.

The *Bacillus botulinus* is an anaerobic organism—that is, it grows in the absence of air. It grows readily at 20 to 25 degrees centigrade, but only sparingly at 37 degrees centigrade,—the temperature of the body, and there is no conclusive evidence that it produces its toxin to any extent in the digestive tract of animals. *Bacillus botulinus* does grow readily and produces its toxin in protein foods, such as meat or fish products. Some investigators state that it also produces its toxin readily in protein-containing vegetables, like peas, beans, and corn. When growing in these foods, the organism produces a very powerful poison which produces the symptoms mentioned above, or even death, when eaten in extremely small amounts. Fortunately, cases of botulism are not common in this country.

The *Bacillus botulinus* is a spore-forming organism, but both the organism and its spores are not very resistant to heat, the spores being killed by heating to 80 degrees centigrade for one hour. The toxin which the organism produces is also destroyed by boiling. Thorough cooking at the boiling temperature is, therefore, all that is necessary to kill the organism and destroy its toxin in the food, and cases of botulism are due to the eating of food which has been infected with the organism and not been sufficiently cooked. Sausages, which might become infected with this organism, present ideal conditions for its growth, and have been a frequent cause of botulism. From this fact the name of the disease is derived. Infected meat products and, in a few instances, canned vegetables and fruits have been given as causes of botulism.

Recently Dr. Dickson of San Francisco has reported* a study of eleven outbreaks of food poisoning, occurring during the past eighteen years in California, which he attributes to eating canned vegetables and fruits. In these cases no definite information is available as to the methods used in canning the vegetables, but it is reasonable to assume that the contamination of the goods might have been brought about by the selection of food of poor quality for canning, by lack of cleanliness in packing the products, by the neglect of some essential steps in the process, or by failure of the heat to penetrate to all parts of the can in sterilization.

There is no danger that the type of food poisoning known as "Botulism" will result from eating fruits or vegetables which have been canned by any one of the methods recommended by the United States Department of Agriculture, providing that such directions have been followed carefully, and that no canned goods are eaten which show signs of spoilage. In case of any doubt as to whether the contents of a particular can have spoiled, it should be thrown away. If fed to chickens or other animals, it should be boiled. No canned food of any kind which shows any signs of spoilage should ever be eaten. In the cold-pack method of canning given out by the Department of Agriculture, only fresh vegetables are recommended for canning, and sterilization is accomplished by the following processes: Cleansing, blanching, cold-dipping, packing in clean, hot jars, adding boiling water, sealing immediately, and then sterilizing the sealed jars at a minimum temperature of 212 degrees Fahrenheit for one to four hours, according to the character of the material. Since the spores of *Bacillus botulinus* are killed by heating for one hour at 175 degrees Fahrenheit† there is no reason to believe that the *botulinus* organism will survive such treatment.

The *Bacillus botulinus* has been found in the digestive tracts of some animals, especially the pig and the fowl, probably occurring there in the same manner as does the organism of tetanus (lockjaw) in the intestinal tract of the horse. It is not a parasite in the ordinary sense, but rather a saprophyte. From these sources it may be deposited on the soil, although attempts at isolating it from the soil have generally given negative results.

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* Jour. Am. Med. Assoc., Vol. lxix, pp. 966-968, No. 12, 1917.

† Rosenau, M. J.: Preventive Medicine and Hygiene, New York and London, 1917, 2 ed., p. 627; Jordan, E. O.: A Text-book of General Bacteriology, Philadelphia and London, 1916, 5 ed., p. 356; Park, W. H., and Williams, Anna W.: Pathogenic Micro-organisms, New York and Philadelphia, 1917, 6 ed., p. 449.

THE MASSACHUSETTS VENEREAL DISEASE PROGRAM.

BY MERRILL E. CHAMPION, M.D., WOLLASTON, MASS.

(*Continued from page 102.*)

IN a previous issue of the JOURNAL (January 17) so much of the venereal disease program of the State Department of Health as has to do with reporting methods was dealt with. The following article deals with:

Subject II—*Measures for Diagnosis and Treatment.* These may be subdivided as follows:

A. Measures for Diagnosis.

I. Clinical—At public clinics and through private physicians.

II. Laboratory—Microscopic examination of discharges for gonococci or spirochetes: and Wassermann tests of blood or spinal fluid, through the State and municipal laboratories.

B. Measures for Treatment.

I. Through public clinics.

II. Through private physicians.

A. MEASURES FOR DIAGNOSIS.

Laboratory diagnostic facilities are now pretty generally available throughout Massachusetts. Smears are examined for gonococci at the State Diagnostic Laboratory at the State House, while Wassermann tests are performed free for physicians by the State Wassermann Laboratory at the Harvard Medical School. In addition to this, a number of cities maintain similar facilities for their own citizens. Certain of the larger clinics make examinations also for the treponema pallidum, and do complement-fixation tests for gonorrhea. It is aimed, by means of further clinic facilities, to be mentioned later, to render possible for the smaller cities what has hitherto been confined to the largest.

B. FACILITIES FOR TREATMENT.

Unfortunately, existing facilities for the accurate treatment of gonorrhea and syphilis are inadequate. Persons suffering from venereal disease go either to the private physician or to the quack, with the exception of those coming to Boston hospital clinics. The number of those going to quacks must largely outnumber those going to reputable physicians. Owing to the difficulty of obtaining salvarsan or its substitutes, and to the difficulties attendant on the administration of this drug, many persons needing specific treatment, in order to prevent them from being a menace to the public, have to go without.

According to an old law incorporated in the Revised Laws, Chapter 75, Section 41 (as amended by 1906, 365, Sec. 1), "Each city shall provide for the treatment, either in a hospital or as out-patients, of indigent persons who are suffering from contagious or infectious venereal diseases." Section 42 of the same chapter states that "No discrimination shall be made against the treatment of venereal diseases in the out-patient department of any general hospital supported by taxation, in any city in which special hospitals, other than hospitals connected with penal institutions, are not provided for the treatment of such diseases at public expense; but any such hospital may establish a separate ward for their treatment." In spite of this mandate, few cities have such facilities. The State Department of Health program contemplates facilities of this sort at various points throughout the State. The relationship of this Department to these clinics will center about the distribution of the arsphenamine, which the State is to manufacture and distribute.

A "State-approved clinic," under this scheme, will be one situated in the center of a district, so as to be easy of access. In the majority of instances, the most satisfactory housing for such a clinic will be a suitable hospital out-patient department. Close coöperation between clinic and local board of health will be indispensable. Arsphenamine will be furnished these clinics, both for their own use and for distribution to qualified practitioners of the district who may wish to use the drug in their own offices for their own patients. Preference will be given, however, to the needs of the clinic, and to those patients who are in an infective stage of their disease.

In charge of the "State-approved clinic" it is proposed to have a "Chief," who, in addition to supervising the work of the clinic, will act as the agent of the State Department of Health for the distribution of arsphenamine. The Legislature is being asked for an appropriation to be used to help in the financing of these clinics. It will probably be found advisable to make most of them more or less self-supporting by charging small fees for services to those who are able to pay.

The general public needs educating to the point where they will demand both careful diagnosis on the part of their physicians and adequate treatment. Such an attitude on the part of the public will be greatly to the advantage of the competent and reputable physician, who is willing properly to equip himself for the treatment of venereal disease. It is the province of the clinic to try to bring this about. Educational measures must, after all, receive most of the emphasis for years to come, if the venereal evil is to be controlled.

A most important feature of any clinic is its follow-up work. The greatest discretion is called for on the part of nurse or social worker, but is of corresponding value in preventing serious results to the patient himself or to his family, through neglect in carrying out his physician's instructions.

To summarize: The Department of Health plans to establish some fifteen "approved clinics" throughout the State, where adequate treatment for venereal disease may be had by those not able to pay anything, or able to pay only a small sum, for first-class care. Such clinics will have for their primary object the stamping out of venereal disease in its infective stages; more particularly syphilis, through the use of arsphenamine. These clinics will serve as foci for the distribution of arsphenamine to practising physicians, and, it is expected, as centers where physicians may send their patients for expert treatment, and where they themselves may come for instruction if they so desire. In a word, the object will be thorough diagnosis, better treatment, modern follow-up work, and closer coöperation with the practising physician.

Correspondence.

REPORTING OF ACCIDENTS FROM LOCAL ANESTHETICS.

Mr. Editor:—

The Committee on Therapeutic Research of the Council on Pharmacy and Chemistry of the American Medical Association has undertaken a study of the accidents following the clinical use of local anesthetics, especially those following ordinary therapeutic doses. It is hoped that this study may lead to a better understanding of the cause of such accidents, and consequently to methods of avoiding them, or, at least, of treating them successfully when they occur.

It is becoming apparent that several of the local anesthetics, if not all of those in general use, are prone to cause death or symptoms of severe poisoning in a small percentage of those cases in which the dose used has been hitherto considered quite safe.

The infrequent occurrence of these accidents and their production by relatively small doses point to a peculiar hypersensitiveness on the part of those in whom the accidents occur. The data necessary for a study of these accidents are at present wholly insufficient, especially since the symptoms described in most of the cases are quite different from those commonly observed in animals even after the administration of toxic, but not fatal doses.

Such accidents are seldom reported in detail in the medical literature, partly because physicians and dentists fear that they may be held to blame should they report them, partly, perhaps, because they have failed to appreciate the importance of the matter from the standpoint of the protection of the public.

It is evident that a broader view should prevail, and that physicians should be informed regarding the conditions under which such accidents occur, in order that they may be avoided. It is also evident that the best protection against such unjust accusations, and the best means of preventing such accidents consist in the publication of careful detailed records when they have occurred, with the attending circumstances. These should be reported in the medical and dental journals when possible; but when, for any reason, this seems undesirable, a confidential report may be filed with Dr. R. A. Hatcher, 414 East Twenty-Sixth Street, New York City, who has been appointed by the Committee to collect this information.

If desired, such reports will be considered strictly confidential so far as the name of the patient and that of the medical attendant are concerned and such information will be used solely as a means of studying the problem of toxicity of this class of agents, unless permission is given to use the name.

All available facts, both public and private, should be included in these reports, but the following data are especially to be desired in those cases in which more detailed reports cannot be made:

The age, sex, and general history of the patient should be given in as great detail as possible. The state of the nervous system appears to be of especial importance. The dosage employed should be stated as accurately as possible; also the concentration of the solution employed, the site of the injection (whether intramuscular, perineural or strictly subcutaneous), and whether applied to the mouth, nose or other part of the body. The possibility of an injection having been made into a small vein during intramuscular injection or into the gums should be considered. In such cases the action begins almost at once, that is, within a few seconds.

The previous condition of the heart and respiration should be reported if possible; and, of course, the effects of the drug on the heart and respiration, as well as the duration of the symptoms, should be recorded. If antidotes are employed, their nature and dosage should be stated, together with the character and time of appearance of the effects induced by the antidotes. It is important to state whether antidotes were administered orally, or by subcutaneous, intramuscular or intravenous injection, and the concentration in which such antidotes were used.

While such detailed information, together with any other available data, is desirable, it is not to be understood that the inability to supply such details should prevent the publication of reports of poisoning, however meagre the data, so long as accuracy is observed.

The committee urges on all anesthetists, surgeons, physicians and dentists the making of such reports as a public duty; it asks that they read this appeal with especial attention to the character of observations desired.

TORALD SOLLMANN, *Chairman,*
R. A. HATCHER *Special Referee,*
Therapeutic Research Committee of the Council on Pharmacy and Chemistry of the American Medical Association.

SOCIETY NOTICES.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY.—Stated meeting at United States Hotel, Boston, Thursday, February 7, 1918, at 11.30 a.m.

Dr. F. Russell Dame, of Braintree, will read a paper on "Septic Cases in Private Practice."

F. H. MERRIAM, M.D., *Secretary,*
South Braintree, Mass.

NEW ENGLAND PEDIATRIC SOCIETY.—A meeting of the New England Pediatric Society will be held at the Boston Medical Library on Feb. 1, 1918, at 8.15 P.M. The following papers will be read:

1. President's Address, Charles Hunter Dunn, M.D., Boston.
2. Clinical Spasmophilia, William W. Howell, M.D., Boston.
3. Experimental Studies on Growth after Feeding Certain Ductless Glands, Warren R. Sisson, M.D., Boston.

CHARLES HUNTER DUNN, M.D., *President.*
RICHARD M. SMITH, M.D., *Secretary.*

RECENT DEATHS.

EDWIN LAWSON FARR, M.D., died at his home in Brookline, January 24, 1918, at the age of 72. He was a graduate of the University of the City of New York, in 1873, and practised in Roxbury until 1915, when he moved to Brookline.

DR. TANEMICHI AOYAMA of Tokio, Japan, an imperial court physician, died recently of nephritis. He was dean and professor of the medical college of the Tokio Imperial University, having held those offices since 1888. He was born in 1859, the third son of the late Kagemichi Aoyama, a Samurai of the Naeki clan.

ALBERT H. VARNEY, M.D., of Newfields, N. H., died recently at his home in that town. He was born at North Berwick, Me., on March 27, 1836, and graduated from Harvard Medical School in 1857. In 1860 he began practice in Newfields, N. H., and continued in his profession in that town and in Exeter, N. H., up to the time of his death. Dr. Varney was an assistant surgeon in the Second New Hampshire Regiment. He was elected to the Legislature from Newfields in 1871, serving one term. For 23 years he was town clerk and several times was selectman. His widow and three daughters survive him.

JOHN ALEXANDER GORDON, M.D., died at his home in Quincy, January 25, 1918, aged 74 years.

Dr. Gordon was born in New Perth, P. E. I., May 30, 1843, was educated in the public schools there and at the Prince of Wales College. He came to Boston in 1866 and entered Harvard Medical School, graduating in 1871. In 1870-1871 he was resident house physician at the Boston City Hospital. He came to Quincy in July, 1871, to practise, and had been a resident of that city ever since.

From 1872 to 1877, Dr. Gordon was town physician, and from 1884 to 1889 was chairman of the Board of Health. He was instrumental in having the Quincy City Hospital established in 1890, and had always been very much interested in its advancement and welfare.

Since 1891 he had been a trustee and chairman of the executive board, consulting physician, and on the medical and surgical staff of the hospital. Dr. Gordon was also interested for many years in developing a water works system for the city, and promoted the Quincy Water Works Company, now owned by the city. He was president of the company for many years, and for a time was also president of the Sharon and Marblehead Water Companies. He was elected to the School Committee in 1884 and served ten years.

Dr. Gordon was a member of Rural Lodge, A.F. and A.M.; St. Stephen's Chapter, R.A.M.; the Y.M.C.A., of which he was a director; the Granite City Club, the Quincy Yacht Club, the Megantic Fish and Game Association, the Boston City Hospital Club, the American Medical Association, and the Massachusetts Medical Society.

Dr. Gordon was unmarried. He is survived by two nephews and a niece.

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Address.

LABORATORY METHODS IN TUBERCULOSIS.*

BY BENJAMIN WHITE, PH.D., OTISVILLE, N.Y.,
Assistant Director, Bacteriological Laboratories, Department of Health, City of New York.

IN spite of the development of laboratory methods during the past ten years, the diagnostician has received little new aid from the laboratory worker in the detection and treatment of tuberculous infections. The one thing most to be desired has been, and still is, some means for differentiating between tuberculous infection and tuberculous disease, or, in other words, a method for determining the presence or absence of activity in a tuberculous lesion. The results of considerable research activity are encouraging, but the fulfilment of this desire still lies in the future.

The bacteriologist has contributed nothing of first importance, but by refining older procedures of finding tubercle bacilli in the excretions and body fluids he has made it possible to detect a greater percentage of positive cases in the examination of such material. The serologist's contributions are promising, but at present are more of academic interest than of practical value.

The diagnostic aid, therefore, which the laboratory can at present furnish must come from the older and well-tried methods; and in order that the laboratory worker may be spared the error and confusion resulting from the many technical modifications recommended in various textbooks, the following brief review has been prepared:

I. Staining.

1. The Ziehl-Neelsen method is still the most dependable and most widely applicable of staining procedures for tubercle bacilli. The carbolfuchsin solution should be made from basic fuchsin, which can also be obtained in this country under the name of "aniline red." Of the various decolorizing methods advised, 3% hydrochloric acid in 95% alcohol is sufficiently strong and eliminates the danger of over-decolorization.

2. Hermann's stain frequently gives positive results when the Ziehl method fails, and, in addition, may be used by those workers who are color-blind to red.

II. Detection of Tubercle Bacilli.

It should be borne in mind that dead tubercle bacilli stain as well as live forms. Therefore, all glass receptacles used in collecting sputum, urine or other specimens should be previously cleansed with concentrated nitric or sulphuric acid, or in hot sulphuric acid-bichromate solution. Only clean new slides should be used. In order to prevent possible infection to workers, or to preserve specimens which cannot be immediately examined, the sputum may be sterilized by heating in an Arnold sterilizer, or even at 120° C. for 20 minutes in the autoclave. The staining properties of the tubercle bacillus are not appreciably affected.

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* Delivered before the Framingham Medical Club and the Community Health and Tuberculosis Demonstration, Dec. 6, 1917.

1. *Sputum.* The direct examination of sputum is adequately described in the textbooks. It is advisable to make smears on slides instead of on cover glasses, because the former give a larger field for search and are less fragile. Where more convenient, the slides may be stained by immersion over-night in carbolfuchsin in the cold instead of by heating for five minutes.

2. *Concentration of Sputum.* All methods recommended are merely modifications of a neglected method of Biedert, published in the eighties. Antiformin is perhaps the most widely used concentrating (or better, dissolving and homogenizing) agent. Where not purchasable, it may be prepared as follows:

Sol. A.	Sodium carbonate	15 gms.
	Chlorinated lime	8 gms.
	Distilled water	100 cc.
Sol. B.	Sodium hydrate	15 gms.
	Distilled water	100 cc.

Take equal parts of A and B (Rosenau).

a. To 20 cc. sputum add 65 cc. sterile distilled water and 15 cc. antiformin.
b. Shake frequently for 1-2 hours until sputum is homogenized, and allow to sediment.
c. Discard supernatant, pipette sediment into centrifuge tube and centrifugalize.
d. Discard supernatant, add 0.8% salt solution, mix and centrifugalize. Repeat washing.
e. Spread sediment on slide, air dry, fix and stain.

The Ellermann-Erlandsen method gives good results and is of particular service when lack of time causes interruption in carrying out the examination. Recently Petroff has recommended a 4% sodium hydrate solution for homogenizing sputum. In the original Biedert method, 0.2% sodium hydrate was used. A 4% solution is more active and apparently does not interfere with the stainability of the tubercle bacillus.

3. *Blood.* The startling announcement in 1908 that tubercle bacilli could be demonstrated in the blood of individuals suffering with incipient tuberculosis raised high hopes of its value as a diagnostic aid, and inspired new investigations. It has since been shown that the bacilli frequently found in the preparations were undoubtedly saprophytic acid-fasts originating in the distilled water employed. While there is no doubt that tubercle bacilli may appear in the blood stream in miliary tuberculosis, and in the agonal stage of pulmonary disease, their presence, as a rule, is so infrequent that a search for tubercle bacilli in the blood for clinical purposes is not recommended.

III. Cultivation.

As is well known, tubercle bacilli, when freshly isolated from sputum, feces or animal organs, grow sparsely, if at all, on ordinary nutrient media, but may be propagated on the various egg media. Petroff has advocated the use of a meat infusion egg medium, to which gentian violet is added for the purpose of inhibiting the growth of secondary or contaminating bacteria. Brilliant green may be substituted to advantage for the gentian violet, and has the advantage of exerting a more marked restraint on the Gram-negative organisms. Recent experiments by one of the author's assistants would seem to show that the inhibiting action of either dye is, at the best, a slight one, and that pure cultures may be obtained as frequently when the dye is omitted from the formula. Griffith has recently recommended that sputum be shaken for a short time with an equal volume of 10% antiformin, and the resulting sediment planted without the neutralization of the alkali. This simple method has been tried out with success.

IV. Animal Inoculation.

Animal inoculation is still the most reliable and the ultimate test in proving the presence of tubercle bacilli in suspected material. Its disadvantage is the delay incident to the development of the tuberculous infection in the test animal, but if more than one animal is inoculated one may be sacrificed at the end of two or three weeks and early evidence of infection thus obtained. The suspected material may be sedimented or centrifuged if necessary, or treated with antiformin when other bacteria are present. The fluid or emulsified sediment is then injected subcutaneously into the groin.

V. Secondary Organisms.

Bacteria other than the tubercle bacillus may, at times, be responsible for an aggravation of symptoms in the tuberculous, and may also be the cause of lung infections requiring nice discrimination in order to distinguish them from the tuberculous process. In such cases great care must be exercised in the collection and in the washing of the sputum, because the material examined should represent a morbid product of the infected area itself, free from contaminating mouth organisms. An excellent method is described by Avery and Lyall. The continued absence of tubercle bacilli from sputum of patients exhibiting abnormal symptoms or pulmonary physical signs should lead to a thorough study of the bacterial flora present and to a reexamination of the patient in the various postures described by Garvin. By these means bronchiectasis and sub-pulmonic abscesses may be diagnosed. In syphilis and malignant disease of the lungs the bacterial flora tells little of the true condition. There the continued failure to find tubercle bacilli in the presence of abundant physical signs would naturally suggest the employment of the Wassermann reaction and of the x-ray.

VI. Serological Methods.

The content of agglutinins, precipitins, lysins and opsinins in the serum of the tuberculous is either too small or else the antibodies themselves are too elusive to enable us to use the usual serological methods for diagnosis. These immune substances, with proper technic, can be demonstrated, but when it is remembered that the immune mechanism in tuberculosis is to a large degree cellular, it is not surprising that its humoral manifestation is slight.

The Bordet-Gengou phenomenon has been utilized with a variety of modifications for the purpose of demonstrating a complement-fixing antibody in the serum of the tuberculous, and thus determining the presence and activity of a tuberculous lesion. The literature has been reviewed by Craig, to whose article may be added those by Petroff and Miller. There is no doubt that the method of complement-fixation, when properly carried out, yields positive results in the majority of tuberculous individuals tested. It is far from being the valuable diagnostic aid that the Wassermann test is, it tells little of the extent of the lesion, and it fails in the prime requirement of enabling one to distinguish between a healed or inactive lesion, and an open or active disease process.

It is eagerly to be hoped that this method may be so perfected that it will take its place beside the classic Wassermann reaction as one of the laboratory's greatest contributions to clinical medicine.

* * *

Original Articles.

THE PROBLEM OF PHYSICAL SELECTION APPLIED TO LARGE NUMBERS OF APPLICANTS.*

By ANDREW F. DOWNING, M.D., CAMBRIDGE, MASS.,

Physical Examiner, Massachusetts Civil Service Commission; Assistant Physician to Out Patients, Boston Consumptives' Hospital; Late Examiner for Tuberculosis and Cardiovascular Diseases, U. S. Army, Dept. of the Northeast.

WITH our declaration of war against Germany and the subsequent passage of the selective draft bill, a difficult problem of physical selection was presented to the medical profession of this country. I speak of it as difficult for several reasons. In the first place, it is not an easy or a pleasant task, even though it be a patriotic one, to assume the burden of sending your patient or your patient's boy, your neighbor or your neighbor's boy, your friend or your friend's boy, into the dangers and horrors of modern warfare. Secondly, the possibility of encountering that type of malingering which skilfully feigns a physical disability, or just as skilfully exaggerates some slight defect, makes the work potential with many trying problems which require time and calm judgment for their solution. The insurance examiner, or the examiner for positions in the public service has to be on his guard only against that type of malingering which endeavors to conceal physical defects. I am speaking from an experience of eleven years of continuous service as a physical examiner of applicants for public positions, especially for positions in fire and police departments, during which time I have gained some knowledge of the latter type.

I have seen a padded wig worn to increase the height; soap made plastic, and chewing gum, worked in under a thick head of hair; and also, for the same purpose, coin-size pieces of thick orthopedic felt fastened to the heels with adhesive plaster and skilfully concealed from view. Very often I have escaped a deluge of stomach contents, consisting of water, milk and bananas, vomited by an applicant under weight just as he was about to step upon the scales. The arrival of the psychological moment apparently produced emesis. Occasionally, I have incurred the displeasure of an applicant whose varicose veins refused to go into seclusion after a course of soaking in alum water and a few days' rest in bed before the examination, with the legs bandaged from toe to hip. It is interesting to see the confusion of the applicant who has spent days learning the eye test card by heart, when he is asked to read backward the very lines that he has learned, or only the letters pointed to by my assistant, or an altogether different set of letters.

But such malingering is easy to detect, and neither time nor thought is required to make a decision. The problem is more complex when you are dealing with counterfeited defects, because time and keenness of judgment are necessary to reach a just and accurate conclusion. My work is in a field where competition is sharp and where men want jobs; that of the draft physician is in a field where competition is not sharp and where men do not want jobs. In his field, physical defects have in many cases become luxuries, possessions to be jealously guarded; and thus, whereas my archives contain only letters protesting my rejections, the archives of the draft physician contain only those protesting his selections.

There is a story told of an old gentleman who, while walking along the esplanade with a friend, was much disconcerted by the passing show of women, young and not young, fair and otherwise, whose short skirts displayed an overgenerous amount of shapely or unsightly calves. Turning in disgust to his friend he remarked, "Thank God, I flourished in the days when legs were a luxury!" Like him, too, I am thankful that I began to flourish as an examiner in the days when legs, good sound legs, were a luxury. The draft physician has begun to flourish in these modern short-skirted days, when, forgetful of the old fighting spirit of our fathers, too many of us were beginning to acquire a spiritual as well as a physical obesity which generously passes over to the other fellow our share of the job of war, and transmutes into luxuries and blessings the inconveniences of unsound legs and of other defects physical.

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* Read before the Charlestown Medical Society, November 19, 1917, also before the Watertown Medical Society, Jan. 9, 1918.

I do not mean to assert that malingering is the rule, or even that it is always an evidence of dishonesty or lack of patriotism among the applicants. Rather does it seem to me to have its origin in that instinct of domination or pugnacity which in all ages has made men delight to match their strength or wits with one another. But no matter what its cause may be, its presence cannot be denied, and therefore it is unfair to criticize the draft physician who, constantly finding himself on the horns of a dilemma, showed his moral courage by risking censure in reserving his judgment, and gave, as he was told to give, the benefit of the doubt to the Government. He has a right to protest against that criticism which was as needless as it was unethical, and as arrogant as it was discourteous. The medical board with which final decisions rest must necessarily be omnipotent. Their decisions, however, will be less likely to be unkind if they will remember that courtesy, like silence, is golden; that omnipotence is not synonymous with omniscience; and that those who wear the insignia of military rank lose nothing in honor or dignity, when they sweeten the bitterness of criticism with a generous supply of the milk of human kindness. Unfortunately in our profession there are too many who "lack not gall to make oppression bitter."

Accuracy in physical examination depends primarily upon the examiner's knowledge of physical diagnosis and also upon his shrewdness and knowledge of human nature. In the practice of clinical medicine, the presumption of ill-health is uppermost; in work of this kind you must presume that the applicant is sound. In the first case, you start with a known or probably abnormal; in the second, you start with a presumptive normal. Thus, the ordinary mental attitude of the physician is reversed, because while a high percentage of patients are diseased, a high percentage of applicants are healthy and sound. He must especially avoid focussing his attention on minor defects which in no way interfere with the efficiency of robust individuals. Although he is chosen for his knowledge of clinical medicine, he must not forget that he is solving an economic problem in which broad vision and mature judgment are demanded. The examiner, for example, who rejects for flat-foot a good physical specimen whose arches are apparently down but functionally excellent, and passes a mouth-breather, a poorly developed chest, or an arrested tuberculous process, because these cases are sound from a clinical standpoint, has failed to grasp the proper mental attitude of a physical examiner. Furthermore, the physician who goes about this work with the spirit of a sleuth, assuming that every applicant is a malingerer until proven otherwise, lacks that human touch which lightens the burdens of our fellows, and thus by committing judicial suicide, he misses an opportunity to convert doubters to a belief in the doctrine of the square deal, and instead makes heretics of many who do believe.

It is not my purpose to review the subject of physical diagnosis. I prefer to speak on the practical side and describe what, in my judgment, is an efficient system of physical examination. Such a system must combine speed with accuracy and eliminate the physical and mental wear and tear caused by the monotony resulting from the needless repetition that accompanies unsystematic work. I firmly believe that in the examination of large numbers of men, much more inaccuracy results from the slowness due to lack of organization than from the speed of systematic work.

At the outset I cannot emphasize too much the value of an able clerical assistant and a well selected place of examination. The importance of expert clerical assistance is absolutely necessary, and as I look back over eleven years of work in this field, I cannot help paying a tribute of appreciation to two assistants, one of whom was my mainstay for seven years and the other for four. To them I owe many of the suggestions that are recorded here and which have made a pleasure of a work that was discouraging enough in the beginning. Long ago, the tailor discovered that his finished work was more satisfactory when an assistant wrote down his measurements. Thus he had an opportunity to keep his attention focussed on his main purpose, the creation of a product that was a credit to his skill. He gathered ideas as he made his measurements, because his mental processes were not interrupted. So it is with the examining physician. Distraction tends to make him inaccurate. Hence he should have no clerical work to do during the actual examination, and there should be present in the examination room proper only one physician, his clerk, and those who are being examined.

The examination headquarters must be chosen with care and should consist of two large rooms, communicating or close by, each at least twenty-five feet in length. A table of some kind, large enough for an applicant to recline on should be part of the equipment. It is a mistake to have the quarters crowded with physicians or hangers-on. Confusion and delay result from several physicians examining in the same room. No greater mistake can be made than to have different physicians doing different parts of the examination, or to employ specialists in their various fields. Save your specialists for consulting work on your deferred or borderline cases, in which their judgment is invaluable. The entire physical examination of an applicant should be done by one man, who should allow nothing to retard the speed with which he travels over the shortest road that leads to the accomplishment of his task.

One of the rooms in the examination suite should be used as a combined waiting, dressing, and writing room for the applicants and placed in charge of an assistant clerk. The other room should be reserved for the actual work of examining. By remaining in this room until the men are ready, the examining physician will avoid the many irritating and distracting arguments that result from his mingling with the applicants. I am assuming that an examiner following my method can do at least fifteen men an hour. These four physicians, each working for two hours at a stretch with the same clerk, can complete one hundred twenty examinations a day. With another examining room and another clerk, four additional physicians would double this output per day. Moreover, since each examiner works only two hours a day, he will not be greatly inconvenienced, or too exhausted to do the same amount of work the following day. If twenty men an hour are notified for each examiner on duty, he will have, allowing for absentees, about the number he is expected to examine per hour. If the applicants are notified half an hour before the examiner is to begin his work, the clerks will have everything ready when he arrives. Even some of this time may be saved by mailing the blanks to be filled out some days before the examination, with the request that they be filled out as directed and sworn to before a justice.

Five men stripped are called into the examiner's room and asked to stand at attention. The clerk arranges their papers in the order in which they stand. Incidentally, I might say that in a short time examiner and clerk will develop the necessary team work. Whatever notes are necessary to make are called out briefly by the physician. When nothing is said it is understood that nothing abnormal is to be noted by the clerk. I take five men in a group because after experimenting with other combinations of more or less men, I found the five-men group system to be the easiest. Speed is not the only advantage gained by examining men in groups. The opportunity given for comparison of physique with physique, of chest with chest, of feet with feet, is an important asset to the physician, inasmuch as his sense of perception is sharpened and his decisions are arrived at more quickly and with greater confidence.

I usually reverse the regular order of procedure and begin with the feet, because, as a rule, it is more advantageous to conduct your examination so that, when possible, the men will not know what part of their anatomy is under observation. With the examiner acting as a leader, the men are asked to put their heels together and toe out as far as possible. This brings the full weight on the longitudinal arch of the foot, giving you immediately any evidence of marked pronation if present. With feet now parallel, they stand on their toes and maintain this attitude for some seconds, when they go up and down several times in rapid succession on their toes. By this time you have some idea of how the feet perform their function. If you are getting a large number of flat-foot rejections, you are probably keeping out of the service many men whose feet would soon meet all the necessary requirements after a few long hikes in the army shoe. The length of an examiner's experience may be judged by the number of his flat-foot rejections. A large percentage of flat-foot rejections indicates the novice; a small percentage indicates the old-timer who has learned to appreciate the fact that feet are not such stubborn children when rescued from the evil influences of cruel and abusive treatment. Varicose veins, hammer-toe, loss of great toe, webbed toes, knock-knees, atrophies, shortenings, ulcers, old tuberculous hips, knee-joint troubles, and other deformities are quickly noted in seconds of time. Again, with feet together and parallel, they look up towards the ceiling with eyes closed. Since among men of the draft age the tabetic may be present, the Romberg may help you, and it takes only a few seconds. Following this, have them take their positions at arms' length apart and, with eyes closed, try to touch the tips of their forefingers as they swing their extended arms forward on a level with their shoulders. This also may enable you to discover an unstable nervous equilibrium.

Standing close together again, they hold out their hands in front, palms up and with arms completely extended. Missing fingers, eczema or syphilis of the palms, ankylosis of elbow or wrist joints, and any other deformities of the hands or arms that impair the usefulness, or spoil the symmetry of the man in uniform, are discerned. Next, the fingers are flexed and extended several times to test the function of their joints, and rotation of the forearm is tested by turning down the palm.

The arms are now held straight above the head with the backs of the hands together. Shoulder-joint trouble that limits motion, or any other condition that prevents the assuming of this position becomes immediately apparent. Since this attitude tends to keep the abdominal muscles in a state of relaxation, the order to cough is now given, and hernia, if present, is noted. I do not believe that it is necessary, as a routine measure, to insert your finger into every canal, because, if you do, you will fall into the temptation of rejecting many dilated rings. A dilated ring is not a hernia. It may be a potential one, but so is an absolutely closed ring. Varicocele, hydrocele, and undescended testicle are also considered at this point. Varicocele, unless marked, is not a cause for rejection. When it is marked, it is usually accompanied by other causes of rejection, such as varicose veins of the legs and severe hemorrhoids. Hydrocele is at least a temporary rejection until cured by a radical operation. Undescended testicle in men of draft age is usually of no importance, unless the testicle is in the canal or accompanied by a hernia. Epididymitis of tuberculous origin and orchitis of syphilitic origin are of course reasons for absolute rejection; but in the work of recruiting, acute and chronic epididymitis of gonorrhoeal origin ought not to be a reason for escaping service, and therefore some provision ought to be made to enable the examining physician to keep these cases under observation until he is satisfied that such applicants may be sent to the cantonment or discharged. When one sees how willingly applicants for positions in civil life undergo the expense and inconvenience of operations for hernia, undescended testicle, hydrocele, hammer-toe, and other defects for which operation is the only remedy, he wonders whether it would not be possible, with the coöperation of the civil hospitals, to have such cases receive whatever treatment may be necessary to make them eligible for military service. In the case of varicose veins, you are not so sure that you will not have recurrences after operation. In Massachusetts, after a careful consideration of much evidence for and against, operated varicose veins are now considered an absolute rejection in the cases of applicants for police, fire, and prison service. Abdominal scars tell their own story. Appendix and gall-bladder scars are of no account, but those subjects, under-nourished and of frail physique, presenting the scars of extensive abnominal operations, should be rejected as poor risks. A marked hernia through an operative scar should also be rejected.

Your five men now execute an "about face." Spinal curvatures, the scars of empyema or kidney operations and other defects are noted and considered on their merits. Bending over forward they are inspected for hemorrhoids. This last request may catch off his guard the applicant who has come prepared to simulate the symptoms of a rigid spine. Facing the examiner again, they are told in a few words to have their chests at expiration when he applies the tape to measure the expansion. This process ought not to consume more than a minute and may take less. The expansion measurement is important to the examiner, because it warns him, in those cases of poor expansion, to be on his guard for trouble. The psychological advantage of this system to the examiner is well illustrated here. Every man in the group is going to try to break the expansion record in order to display his prowess before the others. As a rule, even mature men take an innocent pleasure in boasting of their wonderful chest expansions; thus, in the case of these young men, you are being gladly put in possesion of valuable advance information. Nothing tries your patience so much as the man who has elected the rôle of a respiratory malingerer. While you are examining him, he tries to keep alive on about a millionth of an inch expansion. Of course you can beat him by asking him to take a run long enough to get him out of breath, but this takes time. A normal chest expansion ought to be about one tenth of the circumference at expiration. At least three inches then are required for most adults. Less than two inches indicates some possible trouble, an adherent pleura, a tuberculous process, an emphysema, or chronic bronchitis. A man with a three-inch expansion ought to give you a good respiratory note through your stethoscope. If he doesn't, he is trying to beat you.

Postponing for the time being the heart and lung examination, we proceed to inspect the pupils with the help of a small flash light, which is indispensable to an examining physician. Passing down the line of men from left to right, we try the reaction of the pupils, observing at the same time inequalities, dilatations, contractions, opacities, adhesions of the iris, exophthalmos, nystagmus, strabismus, and pathological conditions of the lids. At this time, pay no attention to anything suspicious, but reserve your judgment and your comments until you are testing the vision. Passing back along the line from right to left, observe the mouth and throat for missing teeth, cleft palate, diseased tonsils, high narrow palatal arch, and mucous patches. You may also look for scars on the tongue, but remember that scars on the tongue are a flimsy piece of evidence on which to base a diagnosis of epilepsy. The test for nasal obstruction is simple, and the mouth breather of the advanced type presents his evidence objectively. The ears may be inspected for chronic discharges, but in this work of the draft, doubtful cases should be deferred for later examination by a specialist. Don't waste time trying to reach a decision on problems the solution of which will test all the skill of a specialist in that particular field. Remember that competence and efficiency are yours if you only recognize conditions that require further investigation.

We are now ready for the examination of the heart and lungs, which to me has always been the most difficult part of the examination, because it is in these border-line cases that one's judgment is put to the severest test. As my colleague, Dr. Cronin, is going to discuss this important subject, I shall speak only about the method of procedure. One constantly engaged in work of this kind finds himself often bothered with sore ears on account of the pressure of his stethoscope. In my early days this was constant and usually assumed the form of a mild furunculosis at the outer ends of the auditory canals. By taking care of my ears, I managed to avoid much discomfort, but they were always raw and chafed when the work was coming fast. I then discovered that it was due to the sudden and rather harsh removal of my stethoscope every time I wished to percuss or talk with an applicant. Moreover, I didn't know anything about ear pieces then. I remember that I used the small variety that fitted too far into the canals, but experience has taught me that you can't have your ear pieces too big. The bigger they are, the better you hear, and the less they irritate your ears.

In the group system of examining, I saw a further opportunity to save my ears—not to mention the saving of energy and time. Teaching men to breathe properly, if you are examining only one at a time, results in needless repetition and, moreover, it exhausts your store of good nature. With this scheme you teach five men at once. Adjust your stethoscope and go over the hearts and fronts and axillae of your five men. Then have them all turn around and do their backs. All the while you have not removed your stethoscope. You can carry on a conversation or percuss, with your stethoscope in your ears, and you are avoiding sore ears by not continually pulling out and readjusting your ear pieces. Following this you can go over your hearts again, after you have put your men under exertion. Here, again, you save time because you are putting five men instead of one through some vigorous exercise. Examine your men standing up. You can't sit down and do rapid work. If you can't stand up, intensive physical examining is not for you. Although the taking of height and weight is a simple matter, remember that you may save or lose much time on this alone. For work of this kind the so-called office scales are a nuisance. The platform is too small; the beam is graduated for only five or ten pounds; there is a confusion of small weights; your measuring rod fits either too loosely or too tightly into its jacket; and you can't read the height until your applicant steps off the scales. If the rod is loose, it usually slips down and you have to repeat the process. Often, on account of the small size of the platform, a tall man finds it difficult to maintain his equilibrium and puts your platform attachments out of commission. If you happen to have a separate measuring stick, either fixed to the wall, or set up on a small box, don't have it fifteen or twenty feet away from your scales. For this work, the most efficient measuring stick is one that comes in two sections and has a fitted joint. The only objection to this stick is that it is slightly inaccurate on account of the difficulty of holding it exactly perpendicular to the floor. Since in this work of the draft the accuracy required in measuring police applicants is not required, this error may be entirely ignored. By adding a quarter of an inch to the measurement of each applicant, the error will be offset. In other words, with any stick that is not set permanently perpendicular to a horizontal platform, your measurement will be under and never over the exact height.

Don't weigh and measure each man individually. Measure your men first, then weigh them. It saves time because it is good psychology. Have your men turn their backs and pass down behind them with your rod. Less than ten seconds will suffice to get the heights of all. For weighing, I prefer the heavy scales used in business houses. Its beam is graduated up to fifty pounds, and with the one-hundred pound weight on, you have no changing of weights or problems of addition to bother you, as it is necessary to change your weight only when a man weighing over 150 or 200 lbs. comes along. The only objection to these scales is that you must stoop to read them. This is avoided by the use of a chair.

All this sounds trivial and elementary, but let me say that if a man wants to get an idea of monotony let him take the heights and weights of fifty men on an office scales, taking the height and weight of each man before passing on to the next. I'll venture to say that he can't do it in less than twenty or twenty-five minutes, whereas it ought not to use up ten minutes by the method I have described. Dante has pictured no more dreadful fate than to be condemned for eternity to take the heights and weights of your associates in the hereafter on an office scales the measuring rod of which slips down before you can take your reading. I cannot emphasize too much that it is in the apparently simple parts of the examination that much time is lost. Let no examiner deceive himself that he is thorough because he is slow. His slowness is due to confusion, laziness, or slow mental processes that prevent his arriving at quick decisions.

Vision and hearing remain to be tested. As a matter of fact you have already noted those with defective hearing while giving your orders for the various positions that you ask the men to assume. Thus you are fairly sure of the man who tries malingering. Keeping your men in a row with their backs to your assistant twenty feet away, have him repeat some short expression while you pass down behind the applicants, closing firmly each meatus.

The standard of vision required for drafted men is not high, 20.40 with one eye, and 20.100 with the other. With your men twenty feet from the card, all but one with their backs towards it, begin with the twenty-foot line. Test the right eye first and then the left. This is rather for the convenience of your assistant than for expediting the work. Cover one eye with a card and avoid pressure. I always have my assistant point to the letters that are to be read. The letters on the 20 ft. line of the regular test card are usually A P E O R F D Z. The man with normal vision will of course read them correctly. The slightly astigmatic man may miss one or two but may be safely passed as having practically normal vision. If a man calls P, F; O, C; R, K; or Z, E; he is not trying to malinger. He is astigmatic and in nearly every case will fulfill the minimum requirements. Remember that the astigmatic man who is not myopic will, as I have pointed out above, call the letters by something that proves him to be neither a guesser nor a malingerer. For instance he will always call A, A. He may call the "P" an "F," but you can readily see that there is a resemblance between these two letters. On the other hand, if you have an applicant who calls the letters in the 20 ft. line by something that they do not resemble, he is either myopic—in which case he ought to be able to produce glasses—or he is malingering. If when you try this same applicant on a 100 ft. and 40 ft. lines, you discover that he can read neither one of these, there is no doubt—assuming that he is a man with education enough to read his newspaper—that he is a malingerer, if he cannot produce his glasses. In work of this kind you usually fix your minimum standard against admitting to the service those who are short-sighted. Your long-sighted man or your moderately astigmatic man is very seldom ruled out by the low standard required for men in the draft. Therefore a slight knowledge of how the astigmatic man's vision reacts to the 20 ft. line will enable you, by the process of elimination, to recognize the myopic or the malingerer. To differentiate between these is, as I have said, not easy unless the myopic man can prove his honesty by showing his concave glasses. If a man says he is blind in one eye and there is no scar or opacity to account for it, try the light reflex. Blindness in one eye abolishes the direct reflex in this eye but the consensual reflex is preserved; *i. e.,* while the pupil of the blind eye does not react to direct stimulus, that of the good eye indirectly reacts when the blind eye is directly stimulated. However, no time should be wasted on doubtful eye cases; and, moreover, no physician should do an applicant the injustice of accusing him of malingering until he has been looked over later by a consulting board of eye specialists and proved to be one.

When a man is rejected for any cause, it is a waste of time to have a second physician repeat the whole physical examination. Rejected and doubtful cases should be called in again at a time set apart for consultation work, and be considered merely from the standpoint of the actual or doubtful physical defect. The syphilitic and the epileptic will very often be passed, and indeed it is useless for any one to maintain that with the ordinary routine of physical examination which is followed today, the passing of such cases is an evidence of carelessness or incompetence.

Such is the outline of a system that has been gradually evolved from a long experience. I give it to you for what it is worth. It is not complex though it may appear to be in the telling. It is, in a word, the simple coöperation of trained medical men with trained clerical assistants. Fifteen men an hour mean four minutes to a man, a saving of six minutes per man against a system in which ten minutes are spent on one examination. For every one-hundred men examined, six hundred minutes or ten hours are saved, in which time many more men can be examined, many rejections verified, and many doubtful cases decided. I have made some suggestions that may not be possible to follow in examining men for the draft. I know that speed is criticized and I know, too, that many so-called lung specialists are shocked at the idea of any one examining the lungs alone in less than half an hour. Is it any wonder that efficiency experts think us to be most inefficient as a body, especially in the matter of time-saving, and is it any wonder that to a layman was assigned the task in this present war of introducing some time-saving efficiency methods into the very operating rooms of our hospitals?

War, always prodigal of men and their opinions, but ever jealously conserving and absolutely controlling their arts, and crafts, and sciences, always impatient of the old, the sluggish, and the nonessential, but ever demanding the new, the nimble, and only the naked essential, pays but little heed to Chauvinistic opinion or jarring criticism. If you can't applaud, don't snarl; if you can't add, don't subtract; if you can't multiply, don't divide; if you can't raise a quality to the *n*th power, don't lower it to the *n*th root. If you have a liking for mathematics, here is a definite problem of practical importance. If each draft physician spends one half-hour examining the lungs of each applicant, how long will it take the United States to raise an army of 3,000,000 men?

Because dire necessity has never demanded that in the clinic activity be substituted for inertia, or the sprint for the dog trot, it does not follow that nimble efficiency has not been long knocking at the door. In this supreme national crisis, nimble efficiency *will* not and *cannot* be denied, for on every side the call is for speed and accuracy, energy and quick decision. To War, the medical stand-patter loudly protesting against methods that are not only progressive, but absolutely necessary, is but the sepulchral voice of one puttering in a clinic, and unwittingly burlesquing that old mythological tale of lightning defied, under the delusion that he is Ajax Aesculapius. War only laughs at him, "as the sea laughs at palsy for its billows," because before he blows the assembly call, it has already been decreed in the words of the old proverb, that in his service, for medicine, as well as for industry, commerce, finance, and statesmanship, the race is to the swift and the battle to the strong.

RE-EDUCATING GERMAN WAR CRIPPLES AT DÜSSELDORF.

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Although there is considerable public opinion in Germany favoring provision for the rehabilitation of disabled soldiers at the expense and under the direction of the imperial government, the work up to the present time has been done under auspices more or less local. The reconstruction institutions have usually been organized and operated through the co-operation of state authorities, municipal administrations, and private charitable societies.

One of the most interesting examples of a reeducational institute established under such joint auspices is the *Verwundetenschule* at Düsseldorf, the work of which has been very fully described in a recent report. At this school the disabled soldiers are given the special industrial training required to enable them to return to a status of independence and self-support.

Düsseldorf is a hospital center for the Rhine Province. Fifty hospitals are located there. War relief is in the hands of the Headquarters for Voluntary Relief, a society amalgamating the interests of the local Red Cross, the Patriotic Women's League and the city administration. Soon after the war began, a department was formed for vocational advice and training for men wounded in the war. The first plans of this bureau took body in one of the city's school buildings, where in February, 1915, some twenty general educational courses were offered to men able to attend school for a few hours a day.

The idea was that these courses in German, penmanship, spelling, mathematics, civics, bookkeeping, and other immediately practical subjects, would give the convalescents a chance to improve themselves and at the same time would give the vocational guidance committee a line on each man's capacity for work when the time came later to train him for a trade. The teachers were from the industrial and commercial secondary schools of Düsseldorf and had their salaries paid from the city budget. Special teachers were secured from among the patients in hospitals or, for this purpose, were released from military service by the authorities. Through coöperation of the provincial government, the city, and the Headquarters for Voluntary Relief, the school was established in suitable buildings, a new building for workshops was erected and equipped with machinery and tools, technical courses for many trades were instituted, and provision made for the maintenance of the pupils.

Where necessary, an allowance is paid to the cripple's dependent family until he is once more earning wages. And it must be remembered that even when that time comes he still receives his pension as a disabled soldier. The pay he may come to earn does not change the amount of his pension, which is determined by the seriousness of his disability. Neither is the fact that he is receiving a pension permitted to influence an employer to underpay him. It is the business of the employment committee to see that war cripples are paid just what they earn —no more, no less.

The work of the vocational guidance committee, particularly of those members who act as friendly advisers to the wounded men, is of primary importance. They come into contact with the convalescent just at the time when discouragement registers highest and ambition lowest. The one-armed man who was once a carpenter or a stone-mason is sure that he can never again do physical labor. He is thinking vaguely of a civil service job, or, failing that, of some ill-paid, sedentary occupation which takes no skill. Or perhaps he is thinking only of his pension. Sometimes he is a victim of the new war disease "work-sickness," a genuine weakness of the will as regards labor.

The vocational adviser starts a course of will-training by making friends with the patient and persuading him to talk of his past life and of such plans as he may have thought of for the future. Where he was a tradeworker he can usually be interested afresh in his trade. A man who has given up all idea of ever working again as a machinist cheers up considerably upon learning that by taking a course in mechanical engineering at the *Verwundetenschule* he can step into his old shop as foreman. And if formerly the cripple was an unskilled laborer he may get a new grip on ambition on being convinced that the wages and happier interests of a craftsman are within reach. Attendance at the school is wholly voluntary and so is the choice of future occupation, but the vocational advisers try to get each man to make use of his former experience rather than to turn unnecessarily to a strange field.

Courses are given for metal workers, mechanical engineers, telegraphers, electricians, carpenters, cabinet-makers and wood-workers, workers in the building trades, locksmiths, sculptors, stone-cutters, paper-hangers and plasterers, printers, photographers and etchers, bookbinders, cardboard and leather workers, dental mechanics, farmers, minor government employees, stenographers and office workers. The trades-courses prepare for the master-workers' examinations which can be taken at the Düsseldorf Board of Trade. Time spent at the school counts as time spent as a journeyman's apprentice. Examination fees have been waived for war cripples. Also, instead of offering a pretentious sample of work as a "masterpiece," the would-be master worker simply has to prove to his examiners that he can do what has to be done by a first-class workman of his trade. The Board of Trade has provided for a special tradeworkers' course in preparation for the examinations.

It is wonderful, according to the directors of the school, in how short a time an almost helpless man can become efficient. A course of five weeks in hand-training can give him a handwriting which is said to be free and characteristic. He learns to do things for himself without help: to dress, shave and feed himself, to swim, bowl and put the shot, to handle a typewriter and to use tools with which he is familiar. From eight to ten weeks' training in the machine shops makes him ready for employment. running one of the highly specialized machines of modern industry. Dr. Karl Gotter, the school's director, holds that in the time required for a cripple's wound to heal he can attain the normal workman's maximum output of labor.

In the hand-training course, one-armed men are taught by one-armed men. By the use of special drawing-boards and instruments, crippled pupils can compete with normal draftsmen. Emphasis is laid on sports and especially on swimming. One pupil recovered the use of a paralyzed lower arm by three months' practice in the water.

Men of the technical courses for the building trades were able to do all the construction work on a seven-thousand-dollar building for the school's workshops, as well as on a set of model three-room apartments erected and fitted for practice. This course fits men to be building carpenters, if they are physically able; or to be draftsmen, foremen or supervisors of roads, streets or waterways. Architectural drafting and building practice go hand in hand. The building is done from working drawings of ground-plan, section and superstructure. The class has instruction and practice in joining, floor-laying, simple plastering and timber-framing, and in the construction of panelled walls, gutters, waste pipes, doors and windows. At the time of the first year's report, five students had passed their examinations as master workers, seventeen others were being prepared for the next examinations and five men were intending to go on for more advanced work to a regular school of building construction.

The work of the mechanic is so varied that no matter what a man's injury he can be fitted in somewhere. If he can no longer be used in the shop he can be trained as a supervisor or can make use of previous experience in one of the administrative departments. Many injured metal-workers take up their trade as draftsmen. The courses in mechanics, physics, electrical engineering, and drafting prepare for these positions, and the machine-shop gives him practice which it would be hard for a cripple to obtain in a factory.

The mechanical workshop of the school has become self-supportng. It fills orders and the pupils are paid a small wage. Pulleys, belt-wheels, bolts, machine-parts, and screws and nuts of all kinds are some of the many things furnished to Rhenish machine factories. The workers in this department are mostly men with stiff or paralyzed arms or with leg injuries. Men with stiff or shortened legs can work well at the turning lathes, although until their wounds heal, they have to take time off for rest. A limp arm is made more supple by filing work. After patient practice, a man who has lost all but the thumb and little finger of one hand was able adequately to grasp with it.

It is not hard to place the wounded soldier who was formerly a printer or photographer. In the classes for men of the graphic trades are type-setters, compositors and lithographic printers, proof-readers, poster artists and teachers of book-decoration. Some of these, after curative exercises have found that they could go on with what they were doing before the war. A typesetter whose hand had been badly mutilated so that he could not hold his tools, after three months of hand-training could make his stiffened fingers do nearly all the work they had done when perfectly flexible. Two printer's assistants were advanced in their earning ability by theoretical courses. A compositor with a crushed hand has been trained as a proof-reader and now has a good position. Two other compositors were made ready to pass their master workers' examinations. A photographer was prepared to make both line and half-tone plates.

The upholstering and paper-hanging trade is one of the few which has not become a machine trade. For this reason it is the harder to adjust crippled workers to its requirements. One man must usually do many kinds of work, necessitating many and varying motions. However, in Germany the paper-hangers' union has passed resolutions accepting the responsibility of finding work for members now war cripples. Employment in large concerns where it is possible for a man to keep at some one process is a solution for some cases. Others are trained for positions as foremen, estimators and office-workers. Mattress-making is another possible occupation, although to do this a man should be able to work in both sitting and standing positions.

The crippled painter and whitewasher need not feel that he is debarred from ladders and scaffolds. Skill in the use of prostheses will give some men almost as much freedom of movement as before. Where he must look for some less active livelihood he has a choice of several profitable lines. If he has decorative taste the Düsseldorf school prepares him for sign painting, to do stencil work, or to make drawings for painters' firms or pattern factories. If he has no special talent, he can be placed in a wagon factory, furniture factory or metal-ware factory to do painting, varnishing, grinding or leather-scraping. In large plants the men will have work all the year, escaping those months of unemployment which are serious drawbacks of the trade. Men with internal injuries, after taking a course in bookkeeping, can find positions as stock managers, using all their previous knowledge of painting and plastering. The school's business is to fit a man to make just such transitions, often training him to fill a place which has already been offered him by his old employer.

The course for stone-cutters, sculptors, wood-carvers and marble-workers welcomes men who have had no previous experience but whose inclination leads them to try this kind of work. They can be trained as assistants and can be placed according to their injury in some one of the branches of the industry. Stone-workers who can no longer work in a standing position can be trained to cut inscriptions. Men with internal injuries or with nervous troubles which prevent them from working in a confusing place can find quiet occupation at wood-carving. Men who cannot do heavy work are taught to construct small models, to do plaster-cutting and to make small casts. As in other trades, the man with some natural ability for drawing is the more easily turned to profitable work. One man who had lost his right thumb learned pottery work, firing, the painting of stone vases, and glazing. After his discharge from military service, he expected to go to a school for ceramic arts. An art locksmith who had been shot in the shoulders and for a long time was helpless, learned to design arts and crafts metal work and hoped to be able to execute his designs in the shop. There he would be taught chiseling, chased work and the coloring of metals. The workshop in this course fills commercial orders, and the students are paid for their labor.

Experience in training wounded woodworkers for positions shows that it will be possible to place practically every student. One-armed men or men with paralyzed arms and hands can be used as polishers and stainers or can be prepared for places as draftsmen, designers, foremen, or clerical workers for a workshop. One-legged men can work at the joining bench or at machine-woodworking. It has been found that the injured and paralyzed limbs are soon benefited by a carefully increasing routine of labor. The workshop and machine-shop of this department are equipped with the newest machinery and tools, the machines having individual motor drive. Twenty-four men in the first year passed their master's examination as furniture carpenters and cabinet-makers.

Wounded soldiers who have had experience on railroads or in the postal or telegraph service are usually taught telegraphy, along with the compositions, arithmetic and geography that an operator needs to make him efficient. And while a man is learning the practical technic of operating, he is also studying the theory of electricity and electro-magnetism and familiarizing himself with batteries, circuits and the nature of the Morse instrument. The students learn to set up the elements, to connect them in the circuit, to connect the batteries with the apparatus, install wires between two stations and to locate the trouble when the wires are out of order. In preparation for using the instruments the men are given hand exercises on detached keys. The school has seven sets of instruments and two students work at each, one sending and one receiving. After hand-training, a left-handed man can equal in skill the right-handed operator. Often, too, a cripple can learn to telegraph perfectly with a crippled hand, which grows more and more flexible with use.

In the course for electricians, unskilled workmen are trained for such handy-man jobs as switchboard operating and armature winding, while men with experience in electrical work or as skilled trade-workers in related occupations are trained to do installation and repairing. The work is subdivided according to the pupil's choice of occupation. The course conforms to the requirements of the German Electricians' Association and a study is made of the most important union rules. The set of three-room model apartments, built by the students of the building-trade courses, is used for practice in installation. Some of these rooms have been plastered and papered by the students of those courses, and others have been kept in the stage of structure-frames only. Each apartment is equipped with a meter and a steel armored conduit. After testing for insulation-resistance, the student-electricians tear down what they have done and do it all over again.

On account of the scarcity of petroleum small towns in Germany feel it a patriotic duty to have electric lighting. For this reason special attention is paid at Düsseldorf to training men to do wiring in the small communities. There has been such a demand for workers in industrial plants, as switchboard operators and armature winders, that wounded soldiers from other provinces have been sent to Düsseldorf for the training. The school now has a large switchboard in connection with direct and alternating current generators and a storage battery. The student learning to operate this at first works from a simple sketch of a switchboard, setting up the connection between a motor, starting-switch, and speed regulator, changing the direction of current flow, and so on through the other processes. He learns to regulate resistance at the main switchboard, and soon comes to know something about the current flow from following the diagram of the plant tacked up over his head.

Without some theoretical training, the war cripple easily becomes confused by the complexity of switches and instruments in a central station. It is harder for him to concentrate because of all the bewildering war experiences he has gone through.

The first students in meter-testing were sent to the school by firms who meant to employ them after training. And now on completion of the school course, when employment has been found for a man at a testing-station, an arrangement is often made for him to take a practical course in the shops of a meter factory. These firms have given apparatus to the school and coöperate with it in every way.

The training of armature-winders was also started by Düsseldorf employers who needed men and applied as a last resort to the employment service of the Headquarters for Voluntary Relief. The school at once began to train a small group of men. After a grounding in theory, which includes a study of the dynamo, the motor, and the construction of the armature, the class makes sketches of the fundamental armature windings. Preliminary exercise in winding is given on an apparatus made in the carpentry shop. Much of the apparatus used in putting together the armatures is constructed by the learners themselves. Fourteen different types of motors have been repaired and wound for local motor-shops by the class. Starters and other resistance apparatus have also been repaired. An armature-winder must have the use of both hands, but a man who has lost a leg or an eye can easily follow the trade. Since there is much work in an armature-winding room that must be done at a lathe a proportion of its workers must belong to the skilled trades.

Men who have worked in the electrical trade, plumbers, and locksmiths are easily trained for electrical fitting and installation. Low voltage installations can be made by workmen who have no special knowledge of the electrician's trade, but the higher voltage work requires trained men who understand the necessary safety measures. Complete paralysis of an arm or hand excludes a man from the fitting work, but with a partial paralysis he can usually do the work. War cripples preparing for installation work take from three to five months of training. Meter-testers can train in four or five months, and get later their practical experience. A heavy leg injury disqualifies for an installation position, as the worker must be able to climb ladders and mount scaffolds.

There is one comparatively new field of labor in which the demand for workmen promises to be much greater than the supply for some time. That is the dental laboratory where mechanics are needed as assistants, moulding and carving artificial teeth, preparing india rubber and its substitutes, and making repairs in celluloid, aluminum, porcelain, and metal. The work is interesting enough and well enough paid to attract intelligent men, and entails no physical strain. It is especially suited to men with injuries of the lower jaw who should have steady supervision by a dentist. Opinion among German physicians and dentists favors training war cripples into this occupation, and courses have been established at Strassburg and in Frankfurt-am-Main, as well as in Düsseldorf. The plan is not new. Years ago the Central Association of German Dentists suggested giving this teaching to deaf-mutes and this was done in a chain of laboratories, some of which still successfully employ these workmen. Each laboratory is supervised by an expert dentist who makes written pledge that the mechanic will not be allowed to do operative work. Before a man can enter the training course at Düsseldorf his qualifications are most carefully considered by a committee of physicians and dentists. Members of other skilled trades are especially desired for this new trade. Cases of heart trouble, deafness, and injury of the leg and often of the hand can be employed.

The training of a dental mechanic includes the fundamentals of physics and chemistry, human anatomy, and physiology, special attention being given to the structure of the mouth cavity. A study is made of the technic of india rubber, porcelain and metal; of repair work and of dental apparatus. With theoretical instruction goes training in the processes of dental mechanics. Visits are made to instrument factories and to dental laboratories. The course covers a period of nine months.

For the sake of a proper balance in the supply of labor, and for the good of the war cripples themselves, the vocational guides make a brave effort to keep tradeworkers from turning to office work. But after all who can be returned to their old trades have been induced to continue in them, there still remain certain groups for whom clerical training is the only thing practicable. Men who formerly held minor government positions are trained in a course for civil service workers. This is also open to those holding certificates entitling them to civil service jobs after discharge from military service, and to men so severely injured that they cannot do physical labor. This last group is the most motley and pitiful of the Düsseldorf classes. A miner, a weaver from the mountains, a waiter from a little restaurant, a chauffeur—to take such men, shattered in body and disheartened by long illness, to put hope into them and to persist until they have made up their deficiencies and are again ready to take up life with pen and ledger, calls for every ounce of inspiration and man-making ability that both teacher and pupils possess.

Another office course is intended for former travelling salesmen and sales clerks, now forced by injuries to look for office positions, preferably in their old line of business. In addition to the German, bookkeeping, commercial arithmetic, and typewriting offered in all clerical courses, these men are given training in commercial law, business correspondence, and business management, with especial attention paid to the relation between employer and employee. They take up the handling of merchandise, buying and salesmanship, and study every step in the management of an industry from its establishment to the last lawsuit to collect payment for bad debts. For a laboratory the class has a model office where it practises filing, card-cataloging, and the handling of adding-machines and dictagraphs. As an elective, students may take either English or French. From the report, the instructor keeps peacefully to the good old standard subjects such as "The Weather," "The Clock," and "What We Use in School."

A ten-weeks' course for office assistants aims to return men formerly employed in the workshops of large industries to the same shops as stock-clerks, accountants, or clerical shop-workers of one kind or another. Here complicated bookkeeping is not needed. All that is essential is to make the workman familiar with technical office terms and processes; to give him such experience as he might by good luck pick up in the employ of a firm. For practice this class actually conducts all the business of the school workshops. About one-fourth of the class studying during the first year were promised work by their former employers.

Of course Germany has a back-to-the-land movement for wounded soldiers. With the cooperation of the Department of Agriculture, farm settlements for war cripples have already been started and are being managed by land companies. All that the wounded soldier has to do, once he has satisfied the authorities that his place is on a farm, is to report with his wife and family at the settlement to which he is assigned. The company will have allotted him the use of as many acres as the authorities decide that he can cultivate. It will build him a house and outbuildings and will have made arrangements for marketing his produce along with that of the rest of the community. If he has capital, he may own his own place; or, he may purchase it as soon as he is able.

The agricultural course at Düsseldorf corresponds to the short winter courses which German agricultural schools offer to farmers. It is intended for wounded farmers who would like to know more than they do know, and for men who would like some agricultural pursuit in addition to their regular occupation. For instance, a rural letter-carrier or a signalman can very well add to his income by poultry-raising, gardening or bee-keeping. Courses are given in farm management, plant cultivation, animal husbandry, business correspondence, and agricultural arithmetic. While there is no school farm for the use of students, arrangements are made for them to work on agricultural estates, in dairies, and in poultry establishments.

Of the occupations which may be carried on at home, small farming is perhaps the happiest and most profitable for the cripple. Its interests and physical activities are varied and may be adapted to each man's capacity. And the farmer's market is inevitable—it is created by public need and not by public sympathy. The other home industries are not so dependable. So far they seem to be industrial compromises, although there are, of course, instances of home industries like the Worpsaed carpets and the Black Forest wood-carvings which are genuine and profitable contributions to the world's productivity. Certain war cripples will be obliged to work at home if they are to work at all. Cases of serious paralysis, of total blindness, tuberculosis, epilepsy and extreme nervousness require attendance, periods of rest and isolation. Work will make them happier, but it must be carefully selected, not too exacting, and not too monotonous. What are these men to do?

The home industries which at present offer some real chance of a livelihood are knitting, weaving, wood-carving, basketry (including the making of wicker furniture), knotting work, and metal-working. But in every one of these crafts the crippled worker needs protection against under-payment. He should be provided with a market, prices should be adjusted for him, and, above all, he should be taught how to make articles which people will really want.

So far, what Düsseldorf offers of most value for such workers is a plan. Dr. Karl Gotter proposes that a certain number of home industries be organized under the management of a society financed by public subscription and by government appropriation. At a central training school the cripples can be maintained until they are skilled enough to work at home, but after they go home they will be visited regularly by a travelling teacher or inspector, who will keep the products up to an artistic and workmanlike standard, teach the men new things about their craft, and encourage original work. The articles produced will be advertised and sold at sales-stations managed by the society. Under such an arrangement home-manufactured goods would have an equal chance with commercial goods at popularity and good prices.

Of the 2,000 men who attended school the first year, about 600 were placed in employment. A good proportion were taken back by their old employers. The need of workmen is now so great that the employment bureau can easily find work for cripples trained to a definite occupation. The real test of the school will come after the war, when the disabled workman has to meet the competition of the returned soldier who is sound and vigorous.

In the old days—and in the United States most of us have been living in the old days as far as treatment of the crippled worker is concerned—the wage-earner who became physically disabled was compelled to move one or two steps down the labor ladder, and, in consequence, down the social ladder too. The main concept which has been developed in the re-educational schools is that the cripple must move up. There is more room for him in the upper rungs than at the bottom. And he can be quickly taught to climb.

PHYSICAL SELECTION IN ITS RELATION TO HEART AND LUNG CONDITIONS.*

By M. J. Cronin, M.D., Boston.

That most eminent physician, Sir William Osler,[1] has recently said: "In the grim game of war, bullets and bacilli put men out of action, and the best general is the one who has the lowest percentage of wastage by the former with as little as possible from the latter. An outstanding feature of the present war has been a reversal of the usual proportion of killed and wounded to those who have died from disease. But there is another group, the unfit, who should be checked at the recruiting office, as they furnish a large contingent in our hospitals and add a needless burden of transport, care and pension.

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* Read before the Charlestown Medical Society, November 19, 1917.

"What I desire to urge, in a few words, is the necessity of stopping at its source this group. It is impossible to deal with all types of unfit men, but let me briefly indicate those who should be kept at home.

"First, the Mouth Breather. 'Shut your mouth and save your life' is the title of Kit Catlin's famous pamphlet, which should be reprinted every few years for distribution. The original title of the pamphlet just referred to was 'The Breath of Life,' and Nature meant this to pass through the nose, an organ which, medically speaking, reaches to the diaphragm. Blocked nostrils mean: (1) Weakened tonsils and pharyngeal resistance; (2) Enormously increased liability to bronchitis and catarrhal troubles of all sorts, and (3) lowered defense against the pneumococcus group. The hospitals have had to bear the strain of caring for hundreds of these men who should never have passed the examining board. No matter how good his chest, or how keen he is to go, or how good his muscles, be merciful to the Army and keep the mouth breather at home. Campaigning is not for him.

"Second, the Hippocratic Chest, as it may be called,—long, narrow, thin and with, as so often happens, the vertically placed low heart. Cut out unsparingly the owners of these. If lungs and heart are not in a good 'case,' the head is of no use in war.

"It may seem very saucy for a man who has never been trained to examine recruits to venture to give advice to his superiors, but this brief note of warning is sent to my colleagues in the United States in the hope that they may profit by the experience of one whose work has been largely with the wastage of the recruiting office."

These remarks are very pertinent to the subject which I am to discuss. Furthermore, they strongly emphasize the fact that the ability of the soldier to withstand the strain and shock of modern warfare depends in great part upon the soundness and integrity of the organs situated within the thoracic cavity.

The selection of men for military service from among a people engaged only in the pursuits of peace for the past fifty years requires the physical examination of a large number in the shortest possible time. Therefore, in conducting examinations, the examiner must combine speed, thoroughness, and accuracy of judgment. There are those who doubt that this combination is possible without sacrificing thoroughness and accuracy of judgment to speed, but after a trial of the group method, as outlined by Dr. Downing, I am convinced that it can be done. In support of this contention the following, from an editorial in THE BOSTON MEDICAL AND SURGICAL JOURNAL,[2] is of interest: "Rapid examinations do not mean snapshot diagnosis, but merely the passing of rapid judgments upon facts actually presented to the examiner. Doubt is often unjustly engendered by lingering too long upon a state of fact that will otherwise be rapidly and accurately disposed of. To be effective in this work, the examiner must only learn to make a diagnosis when the facts are before him; must develop his powers of observation; must learn to be quick in making his decisions,—indecision is fatal everywhere; must learn to pass the rare and interesting cases by just as quickly as the ordinary one; and must learn not to spend too much time between each examination. The whole matter of thorough examinations, combined with speed, resolves itself into the elimination of time waste and duplication. These two elements mastered, no amount of speed is to be feared. What advantage is the lengthening out of the time of examination, if it is at the cost of repetitions of hearing, seeing and feeling? The medical examiner must be able to see when he sees, hear when he hears, and feel when he feels, without repeating every sensory impression to make sure that it is so."

If a tuberculous process is found at either apex, why waste time trying to locate another process at the base? Or if valvular heart disease is discovered, why bother to see whether there is an enlarged liver or edema of the lower extremities? It is only necessary to take sufficient time to enable one to describe briefly the defect which is a cause for rejection.

Past history has no place in these examinations except as confirmatory evidence, after examination has revealed some defect or suspicion of defect. For example, if an abnormality or suspicion of abnormality is discovered, a few questions may bring forth a history of susceptibility to attacks of bronchitis, either alone or associated with asthma, of pleurisy, or of a cough extending over a long period. With heart murmurs, the history of frequent attacks of tonsillitis or rheumatism may be elicited. In aortic lesions inquiry may reveal the history of past syphilitic infection, which it is well known has a distinct liking for the aortic orifice. But as a rule decisions are rendered almost wholly upon objective evidence.

Inspection.

This, to my mind, is very important, as it reveals much in a minimum of time. Almost at a glance can one take in any evident departure from the normal from the eyes to the waist line; the degree of robustness; muscular development; the eyes for exophthalmos; mouth breathing; neck for enlarged thyroid and lymphatic glands; chest characteristics,—whether of the vigorous, robust type, or the long, thin, flat type, so indicative of delicate constitution; the barrel-shaped chest of emphysema; and signs of retraction of the supra- or infraclavicular spaces. A deep breath will reveal any inequality in the expansion of the chest or of the apices, and also furnish an estimate of the air capacity of the lungs. Actual measurements of chest expansion afford the most accurate information as to lung capacity. An expansion under two inches should arouse some suspicion of lung defect. The normal subject of draft age, however, should do three inches or better.

Percussion I believe to be of minor importance. What has been said in regard to history applies to percussion as well. Its use is secondary to auscultation and necessary only when auscultation reveals some abnormality.

Auscultation.

It is necessary to auscult only the bases, axillae and tops above the third rib in front and the mid-scapular behind. With ten or a dozen good breaths an opinion can be formed as to lung condition which will be accurate ninety-nine times out of a hundred. This applies to the normal chest and to marked abnormalities. The doubtful or border-line case of course demands more time, but I have been impressed with the fact that the more prolonged investigations do not materially change the first impressions.

The steps just outlined are all elementary, but after examining a large number of men in a short space of time, I am convinced more than ever that the application of these fundamental principles makes for speed, accuracy and greater efficiency than the slower methods of the tuberculosis clinic. In other words, the methods of the clinic or consulting-room must be replaced by an appreciation of what is required and by the application of common sense.

On the assumption that all subjects are likely to experience active service in trench warfare, the following non-tuberculous conditions found in the chest constitute causes for rejection: *First.* Subjects showing developmental defect of the thorax associated with an apparent delicate constitution, even in the absence of definite disease. Such men are underweight, have poor resistance and consequently are poor risks. *Second.* The mouth breather, with, as Osler says, a susceptibility to all kinds of respiratory infections. *Third.* Emphysema of any grade, even without coexistent bronchitis. *Fourth.* Chronic bronchitis and asthmatics. *Fifth.* Those showing any sequelae of empyema, sunken chest of any degree, diminished expansion of the affected side, or any signs showing the lung tied to the thoracic wall by adhesions.

TUBERCULOUS CONDITIONS.

First. The old fibroid case, usually of poor physique, feeble respiratory murmur, and with or without râles. *Second.* Any subject showing the slightest suspicion of an active process. In many instances an active process is discovered in an otherwise robust man, and one is often surprised when with the first breath there is revealed the harsh, or broncho-vesicular respiratory sound with a few fine râles. The more advanced cases can be easily recognized. *Third.* The arrested case. Inspection may or may not show a retracted apex; the respiratory sound may be from harsh to almost pure bronchial and unaccompanied by râles; the general condition may be good. Such individuals, however, have a latent infection and sooner or later, under the strain of actual service, an active process may start up. We are told that an accentuated second pulmonic sound is one of the diagnostic signs in these border-line cases. These cases are oftentimes difficult to classify. A decision can be reached only after the objective evidence has been carefully reviewed. It is here that past history, if reliable, would assist.

This work differs from clinical work in that there is not the same opportunity for continued observation and study. Deferred examinations and consultations should be the rule with draft boards, and thus the interests of both the Government and the individual would be better conserved.

To define just what constitutes tuberculosis is difficult, if not impossible. It is now believed that the infection is primary in the bronchial glands and thence extends to the lungs. Bronchial gland tuberculosis may exist without apparent auscultatory signs in the chest. If so, the subject is not likely to present the picture of vigorous manhood, and it is better for the interests of both country and individual to reject such cases on suspicion than to pass a man on to his doom from physical breakdown from the strain of war. No doubt there will be those rejected who should go and, on the other hand, some may be sent who should be retained. One hundred per cent. efficiency cannot be secured until the would-be soldier has had the advantage of at least six months to test his physical endurance.

THE HEART.

The normal heart can be judged in seconds of time, also those unfit for service because of valvular disease. When rapid heart action is found, if hyper-thyroidism, myocarditis, and disease of the lung can be eliminated, we conclude that the rapidity is due to psychic causes and therefore we may safely select the man for service. The slight systolic murmur often encountered with tachycardia is of no consequence. A definite accentuation of the pulmonic second sound or a short snappy first sound should always suggest mitral disease or some pulmonary lesion. A sharp accentuation of the aortic second sound suggests high blood pressure. While a high blood pressure is not always associated with an accentuated aortic second sound, blood pressure reading should always be taken in these cases in order to rule out a nephritis or the cardiovascular effects of syphilitic infection. A slight murmur associated with definite enlargement or displaced apex and accentuation of second sounds means valvular disease and therefore a cause for rejection. A slight degree of mitral stenosis may give rise to a murmur so faint that it may be distinctly audible only after exercise or when recumbent.

Largely by its sound does the heart tell us whether or not it is able to perform properly its functions. Any defect in itself is revealed by an adventitious sound or murmur. But there are murmurs *and* murmurs. Let us consider them and see if we can distinguish between an important and an unimportant murmur. Are some murmurs organic and others functional or accidental? If so, how interpret them?

There is no standard upon which to base the diagnosis of functional murmur. The textbooks tell us that these murmurs are almost always systolic in time: they are usually heard in the second left interspace and at the apex; they are soft in character and variable in intensity, and are rarely transmitted; they are not associated with accentuation of the pulmonic second sound or with hypertrophy of the left ventricle. In Nothnagel's encyclopedia of practical medicine,[3] is the following: "It is true that hemic murmurs are usually very soft, but the same thing is occasionally observed in cases of true insufficiency. Systolic murmurs are heard quite often without obvious or even distinct signs of anemia and without any cause to justify the assumption of a functional valvular disturbance." Cabot[4] says: "They are especially apt to be associated with anemia, although the connection between anemia and functional heart murmurs is by no means as close as has often been supposed. The severest types of anemia, for example, pernicious anemia, may not be accompanied by any murmur, while, on the other hand, typical functional murmurs are often heard in patients where the blood is normal, and even in full health." Sir James Mackenzie[5] says: "As a young man I told people with heart murmurs that they were in a bad way; but they did not die, and I began to separate the murmurs—the innocent ones from those of importance. Some murmurs might mean anything, and the man might be in perfect health. He had seen a lad who had been rejected on account of heart murmurs. He found that he was the leading athlete of his school and that the following day he won a prize for running the longest race in record time. Men were continually being rejected for life insurance through heart murmurs. He gave a certificate to a man who had been rejected seven times. That man has now been in the fighting and is quite well." Far be it from me to doubt any statement of Mackenzie's in regard to the heart, but what one man with a heart murmur may have done in the fighting is not a safe criterion by which to judge hundreds or thousands of other men who may show similar murmurs.

Life insurance is a business proposition. The medical directors of the strongest and best companies practically agree that it is impossible to differentiate between a functional and an organic heart murmur. One medical director states as follows[6]: "The only sure differentiation is made by the subsequent history of the individual. If the murmur disappears permanently, then the presumption is that it was a functional murmur. As long as an applicant shows a murmur of any kind we do not consider it safe to accept him." These conclusions on the part of life insurance companies are based on statistics. Statistics are cold economic facts which are not subject to change as are medical opinions.

Galli,[7] chief of the special medical service for soldiers with heart affections in the Italian Army, states that evidences of arteriosclerosis of the aorta and coronaries were found in 45% of 60 young soldiers supposedly entirely healthy when killed.

Parkinson[8] found that over 50% of 90 soldiers sent back from the front on account of cardiac insufficiency had signs of it before enrollment. In only five had the first symptoms developed after an acute infection. In 30% there was valvular trouble recognized before enrollment in all but three. He comments on the frequency of latent heart disease among civilians, the result of some infection early in life, saying that while it may remain latent indefinitely in civil life, it flares up under the stress of military service.

Mintz[9] says: "The heart, even with a well-compensated defect, responds differently to excitation (pulse rate, blood pressure) from the sound heart. If we consider the accentuation of the second pulmonary sound with overburdening of the heart an index of its functional capacity, then we must arrive at the conclusion that the reserve force of the heart, even with perfect compensation, is limited and small. Accepting this, it follows as a matter of course that men with even slight heart defects cannot be utilized for military service."

We have all seen patients showing a slight systolic murmur at apex or base, which we considered of no importance, and which we were unwilling to call either functional or organic, preferring rather to let time render the decision. For years some of these cases may not develop any signs of cardiac distress, while others develop well-marked valvular lesions, which in some instances, under strain—pregnancy, for example—reveal the classical signs of true valvular disease.

Therefore, while murmurs are found which may seem of slight importance, there are no definite standards by which they can be designated as functional. Consequently, in this particular work, it is safer to assume that these murmurs indicate a latent heart infection; that at some time in the past life of these individuals, slight structural changes causing a murmur have resulted from an inflammatory process of mild degree. I firmly believe that in this work of examining recruits, the spirit of fairness underlying the selective draft act is nullified in many cases by the consideration of this mythical, so-called functional murmur.

Our country is confronted with the task of rapidly raising an army large enough to be a force in this gigantic world-struggle. Such an army requires a degree of physical health much greater than for active work in civil life. Thus in its selection, physical examination becomes a matter of the greatest importance, because it is solving, on the one hand, a problem of preventive medicine and on the other an equally important one of economics. The man with tuberculosis may infect his fellows. In such an event the expense of their equipment, training, transportation and maintenance, as well as that of his, represents a useless outlay of the nation's resources, and in addition there must be considered the further expense of care, and of pensions for disability incurred in line of duty.

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A STUDY OF THE KIDNEY FUNCTION IN SENILITY.

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To quote a recent publication, "death follows on account of the insufficiency of the excretory process, therefore the limit of life is a matter of excretion," is to express a rather general notion which medical men have come to have. Old age is considered by many to be a chronic, incurable disease, associated in large part with, or caused by, a diminution of kidney function.

This study is an inquiry into the functional conditions of the kidneys in late life, designed in part as an assistance in the interpretation of post-mortem findings in cases coming to such a study. A group of 41 patients was studied, in which group the ages ranged from 70 to 88 years. None of the patients had shown any fever, dyspnoea, edema or other signs within a period which could in any way be considered as influencing the findings in this study. The hemoglobin of all the patients ranged between 75% and 100%. The blood cytology was essentially normal. A great majority of the patients studied were active, not only working about the wards, but most of them have been engaged in manual labor or in the industrial rooms. On the whole, the coöperation of the patients was good indeed, despite the fact that every one was psychotic. It is true, however, that the more complicated tests, such as the two-hour test, could not be carried out.

The features that were studied in this group were the blood urea, expressed as blood urea nitrogen, blood pressure, phenolsulphonephthalein test for renal function and the urinalysis. The blood urea nitrogen was determined by the Marshall urease method. The soy beans were ground, dried, powdered and sieved, giving a stable, easily handled enzyme. The aeration and titration method was used in determining the amount of urea nitrogen in the sample of blood used (5 cc.). In every case the blood was drawn in the morning before breakfast, twelve to fourteen hours after the preceding meal. This plan of obtaining the blood so long after the preceding meal fails, of course, in securing evidence of slight retardation in the excretion of urea, as might well be expected in these cases. But the plan does give values which are independent of the food intake and gives an idea of the constant level of blood urea characteristic of the individual. Blood taken on different days, and at considerable intervals on the same patient, has shown very close approximations of the urea nitrogen on these different occasions, as the appended tables show. The blood pressure readings were taken in the mid-afternoon by means of a mercury manometer. The values given are either the average of several readings, where the readings were fairly uniform, or several readings taken on different occasions, where the different readings have not been so close. The phenolsulphonephthalein test of Rountree and Geraghty was used in the usual manner. It is worthy of note that the standard solutions used in this test should be made up frequently, as they fade even when carefully sealed. This applies in my experience only to the standards made up in the laboratory, not to the sealed standards of purchased colorimeters. The urinary examination was done in a routine manner; no special attempt was made to find casts, for instance. The two-hour test meal studies could not be carried out on these cases, nor could an investigation of the quantity of the day and night urine be conveniently made. However, it is a distinct impression, judging from the few cases in which the latter was studied, that there is in most cases an increase in the night volume. Tests, such as the elimination of lactose, potassium iodide, methylene blue, indigo-carmine, etc., were not applied nor was the action of diuretics investigated.

DISCUSSION OF THE RESULTS.

Using the blood urea nitrogen as a criterion, there was found evidence in this group of a mild degree of retention in a number of cases,—about 50%. Just what value of blood urea nitrogen is to be considered normal influences, of course, one's opinion whether there is or is not retention in a given case. In all the cases I have studied, the preceding meal can have little to do with the figure. During the course of over 100 blood urea determinations in other connections on younger individuals who were on the same hospital diet and routine, the blood being taken, as in this study, before breakfast, I found no value over 16 milligrams (in cases free from demonstrable kidney insufficiency) and only 3 over 15 milligrams per 100 cc. of blood. Two of these cases showing a value over 15 milligrams were on cases whose blood urea nitrogen had been done at least 15 times, so I have come to consider that under the conditions of diet, etc., here, the upper value for normal blood urea nitrogen is about 15 milligrams. I realize this value is at variance with figures given by others, but under the conditions here, it is seldom that a blood urea nitrogen value of over 15 milligrams is found. The usual values range from 9 to 14 milligrams per 100 cc. of blood.

Turning to the blood pressure readings: of the 40 cases in which both systolic and diastolic readings were taken there were 21 cases which showed a systolic pressure of 160 mm. or over. There were 28 cases showing a diastolic reading of 85 mm. or over and 23 cases with a diastolic reading of 90 mm. or over. Of 19 cases showing a blood urea nitrogen of 16 mgm. per 100 cc. or over, 7 showed a systolic pressure of 160 mm. or over, whereas in this same group of 19 patients, there were 15 who had a diastolic blood pressure of 85+ mm. and 12 with a diastolic pressure of 90+ mm. If a diastolic reading of 85 to 90 mm. is considered as much a relative elevation of diastolic pressure as 160 mm. is an elevation of systolic pressure, then it is evident that a retention, judging from the blood urea nitrogen, is associated with an elevated diastolic pressure about twice as frequently as it is with an elevated systolic pressure. This is an observation made very frequently and one which has been given considerable emphasis. It is a correct observation, but in the cases studied here, including another larger series in which the elevated blood pressure was the criterion of selection, a low blood urea nitrogen is just as likely to be accompanied by a high diastolic blood pressure as is a high blood urea nitrogen. Nor can it be said that an elevated blood pressure—either systolic or diastolic—allows a prediction that the blood urea nitrogen is elevated, for only about 50% of the cases with a high blood pressure show a high urea nitrogen (see tables).

When the renal function is considered (*i.e.*, the phenolsulphonephthalein output), there appears to be little, if any, relation between the rate of elimination of the dye and the value of the blood pressure. Fourteen of the nineteen cases showing a high blood urea nitrogen have an average rate of elimination within 5% of those cases showing a more normal value of blood urea nitrogen. When the renal function test values are examined, it is evident, especially with the lower percentages of excretion, that the low rates of excretion of the dye are associated for the most part with a high urea nitrogen. When, however, there is a poor elimination of phenolsulphonephthalein, associated with a normal blood urea nitrogen, there is usually a high diastolic blood pressure. Here, again, one looks upon an elevated diastolic blood pressure as significant, but an examination of the diastolic blood pressure in cases with a good elimination of the dye shows that many of these cases, too, have a high diastolic reading.

On urinary examination there was found albumin in 10 cases (25%). This finding had little relationship to the other determinations. Casts were readily found in routine examination in a majority of the cases (a frequent observation but pointing, of course, to damaged kidneys). None of the cases showed glycosuria, although several of the cases did show a moderate hyperglycemia (not reported upon). There was little inability of the kidneys to pass a urine of reasonably high specific gravity on demand.

Five of the six cases of this series have been autopsied, several dying too early in the study for complete figures to be obtained. These five cases have shown, as usual, extensive arteriosclerosis and fibrosis of the liver, heart, spleen and other organs and gross evidences of chronic interstitial nephritis. Two of the cases showed very extensive destruction of the renal architecture. Since permission for post-mortem study can be obtained in the majority of the cases dying in the hospital, it is hoped that this antemortem inquiry may be of some assistance in later studies.

SUMMARY.

The present study was made on a group of 41 patients, whose ages ranged from 70 to 88 years. These patients were free from gross evidences of renal insufficiency or other compromising conditions (fever, edema, dyspnea, anemia of note, etc.) and most of them were active workers.

Under the conditions of diet and hospital routine here, the upper normal value of blood urea nitrogen is considered as 15 to 16 mgm. per 100 cc., the blood being drawn before breakfast, 12 to 14 hours after the preceding meal.

Fifty per cent. of the cases studied showed a moderate degree of retention, using the blood urea nitrogen figures as a criterion.

Fifty per cent. of the cases showed a systolic blood pressure of 160 mm. or over; a higher percentage showed a diastolic pressure of 85-90 mm. or over. The blood pressure readings cannot be said to be related to either the blood urea nitrogen or to the rate of elimination of phenolsulphonephthalein.

In 27 cases in which the elimination of phenolsulphonephthalein was determined, 13 showed a value of 40% or lower; 9 of these were 35% or lower. A low value of elimination of

No.	Age	Blood Urea Nitrogen	Blood Pressure	Urine					Renal Function
				Spec Grav.	Alb.	Sug.	Blood	Sediment	
448	71	17.36	165-95 140-70	1010	0	0	0	Rare hyal. cast	55% 35% (1916)
261	78	11.2 12.3	152-80 140-80	1014-22	0	0	0	Hyal. and gran. casts	uncoop.
131	74	8.4 9.2	160-95 140-85	1012-18	0	0	0	Rare hyal. cast	50%
319	77	12.12 11.76	180-90 150-85	1024	0	0	0	Few cylindroids—no casts	45%
337	72	20.2 18.2	130-70	1020	sl. tr.	0	0	Gran. casts	15%
26	71	16.2	140-90	1010	s.p.t.	0	0	Occ. hyal. cast	40%
467	79	18.5	128-80	1025	0	0	0	Few gran. casts	40%
427	79	10.1 11.2 15.1	120-84	1025	sl. tr.	0	0	Few gran. casts	incont.
446	87	23.3 29.9	120-60	1024	0	0	0	Pus, no casts	15%
472	74	14.0 13.7 14.6	180-100 150-95	1020	0	0	0	Occ. hyal. cast	35% 35% (1916)
107	77	17.9 15.7	160-80 168-95	1013-22	0	0	0	Rare hyal. cast	55% 70% (1916)
519	75	15.4 13.2	200-110 150-110	1004-28	0	0	0	Occ. hyal. cast	60%
466	76	11.2 15.9	106-52	1020-30	0	0	0	Gran. and hyal. casts	60%
*715	73	7.3	160	1020	trace	0	0	Hyal. and gran. casts	....
313	73	10.6 13.4	185-105 190-120	1022	0	0	0	Rare hyal. cast	35%
67	73	ref.	210-120	1016-30	0	0	0	Few hyal. and gran. casts	uncoop.
235	73	13.4 15.1 9.24	190-95 180-90	1010-14	0	0	0	No casts	55%
110	71	12.9 11.8 13.4	200-120	1020	0	0	0	Few hyal. and gran. casts	45%
*106	83	20.2	215-100	1020-24	0	0	0	Occ. hyal. casts	25%
*136	70	34.8	270-160	1010-22	0	0	0	Many gran. and hyal. casts	45% (1916)
143	75	12.3	180-100	1011-20	0	0	0	Rare hyal. cast	disch.
509	87	8.7	240-90 180-95	1016-18	0	0	0	Few gran. casts	65%
432	70	21.8 16.9	230-100	1018	0	0	0	No casts	disch.
240	88	16.8 16.8	200-140 180-115	1008-22	0	0	0	Occ. gran. and hyal. casts	uncoop.
341	73	uncoop.	130-90	1014	s.p.t.	0	0	Occ. hyal. cast	uncoop.
437	78	14.0	145-82	1022	trace	0	0	Numer. hyal. and gran. casts	30%
407	71	21.8 19.0 17.4	118-80 130-90	1020	0	0	0	Many hyal. and gran. casts	60%
242	70	16.5	150-90 170-115	1006-12	0	0	0	Gran. casts	30%
*859	86	...	180-78	1020	sl. tr.	0	0	No casts	....
408	76	11.7	165-75	1004-20	0	0	0	Hyal. and gran. casts	35%
284	74	20.7	160-100 130-75	1005-30	0	0	0	Gran. casts	55%
40	73	15.4 15.96	130-70	1022	s.p.t.	0	0	No casts	uncoop.
776	71	23.0 23.5	150-95	1012-20	0	0	0	Few gran. casts	30%
41	77	16.24	180-100 150-70	1014	0	0	0	Rare hyal. cast	uncoop.
334	70	22.4 15.4	166-88 135-75	1012-24	s.p.t.	0	0	Hyal. and gran. casts	60%
404	70	16.0 15.4	140-100 160-90	1016	0	0	0	Rare hyal. casts	50%
*469	82	...	140-75	1020-25	0	0	0	No casts	....
764	81	15.1 15.4 20.3	190-90 240-130	1018-20	sl. tr.	0	0	Occ. hyal. cast and pus	uncoop.
*277	70	16.3	180-120 200-90	1015-21	0	0	0	Hyal. and gran. casts	....
853	76	17.6 17.6	170-80	1035-18	0	0	0	Few gran. casts	40%
278	70	12.8	195-100 170-85	1012-22	0	0	0	Few hyal. casts	40%

* Died; autopsies have been done on Nos. 715, 106, 136, 469 and 277.

the dye is associated for the most part with an elevated blood urea nitrogen. A good excretion is related for the most part with a relatively low blood urea nitrogen.

Twenty-five per cent. of the cases showed albumin in the urine. There were no cases of glycosuria or hematuria. Practically all of the cases showed casts—a customary observation.

Sixty-six per cent. of the cases showed either an elevated blood urea nitrogen or a depressed value of phenolsulphonephthalein elimination (40% or lower). If one disregards the findings of only a few casts in the urine and disregards the blood pressure also, it can be said that, in the group of patients studied, about 70-75% show easily demonstrable evidences of kidney insufficiency.

It will be noted that in this group there are several cases showing a relatively low blood urea nitrogen and a good renal function, but which have a considerable elevation of blood pressure, the so-called cases of "essential" hypertension.

Clinical Department.

A PSYCHOPATHIC CONSTITUTION RESEMBLING SO-CALLED MORAL INSANITY, AND ITS INTERPRETATION.

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AN exceptionally interesting boy was sent to me for examination and diagnosis in June, and his case again placed before me the month after, his conduct bringing him into the Children's Court.[*] As this is a type of child so frequently mislabeled "feeble-minded," and even more often "degenerate," "moral imbecile," or "moral delinquent," and yet in reality is none of these, but just a "psychopathic constitution," I feel that the report of the case and its psycho-clinical interpretation might prove instructive.[†]

Master John X. is 10 years and 6 months old, born in America of foreign parents, the latter apparently of fairly good stock. The father was a sailor, his own people sound and considered bright (all having obtained positions rather over the average). The mother, who brought the boy, is an intelligent woman, giving no sign of nervousness or psychopathy. Her account may be summarized as follows:

The boy's heredity, she believes, is entirely negative (the only abnormality noted is the father's being ambidextrous). Her own fraternity and that of her husband and *their* children (the patient's cousins) are all normal. She herself has two other living children that are healthy, and had one stillbirth in the 6-7th month. No miscarriages.

The patient was born prematurely (in the 7th month), weighing but 3½ pounds, and showed a nasal deformity (thought at the time to be possibly an abnormality of the septum or cartilages. Everything else negative. The child picked up rapidly and walked, talked and teethed at the normal time. He never had a high temperature nor a convulsion. An operation was done on the nose at the age of four to clear the obstruction and, if possible, find out the cause of the trouble (a tumor was suspected, but none found). The wound healed very slowly. There were two or three later operations on the nose.

The present complaints (given by the mother) are serious and rather unusual: The boy frequently loses grip on himself. For days at a time acts as under a drug; seems dazed. Fancies everyone is against him, especially the boys at his school. Has a "terrible" temper. Getting worse. When excited, jumbles his words. Has attacks of rage. If he does not get what he wishes, goes into spasms in which he fumes, gets blue, tears and breaks things. Tore a large mass of hair out of his sister's head on one occasion. Once cut somebody's wrist with a large knife while in such a tantrum. Lies "dreadfully." Says he tries to stop it but cannot. Steals money and things. Appears to have no memory. Can recall nothing. Has two sisters and has difficulty in remembering their names; frequently gets the names confused. (No doubt due to dissociation and dispersive attention. Memory tests proved negative.) Cannot concentrate at all; a fly, for instance, will distract him and keep him from playing, studying or working. Is very restless in his sleep, throws himself about, constantly grinds his teeth. In school evidences strong erethism, talks much, constantly asks questions, moves about the room. Accomplishes nothing. Strongly constipated.

Additional Facts.

Never keeps a promise.

This morning he took a picture not belonging to him. Swore he hadn't it. Said to his mother, "Mother, I'd be put into hell, the Lord would not have me in Heaven if I took it." And yet later the mother found the picture on him. He knew that it was wrong.

He also tried to get his sister to take things. Once, when 8½ years old, made his sister take something, saying he'd kill her if she didn't.

Likes to play with fire. Twice set the house on fire (the last time three years ago). Just wanted to see the flames. His mother, to cure him, burned his finger with a match. This seemed to help some, but still likes to play with matches.

If left alone will go through drawers, meddle with the clock, the hot irons, etc.

Has run away three times; last time two years ago. Took subway to end of road and then walked a long distance. An officer found him and brought him to the station. There he said he would not go home; that he was badly mistreated, etc. On my questioning him why he did this, he answered that his teacher said if he did not come back the next day with clean covers and clean book, she'd hit him. "So I ran away and told the story to the police to get farther away—I expected to go far, far away." Later added, "How could I have clean covers and book if they were dirty?"

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[*] This child, in the charge of Miss Gregory of the Public Education Association, was referred to me by Prof. Heckman, of the Dept. of Pedagogy, C. C. N. Y. The case came up before Justice Levy of the Children's Court in July, for which trial this report was prepared.

[†] For a full study of the Degenerate, Born Delinquency, etc., see the author's paper on this subject in "The Archives of Diagnosis," New York, April, 1917.

Is pathologically lazy. Will not undress himself at night; rather goes to bed with his clothes on. Will frequently rather soil himself than go to the toilet, it being too troublesome to undo his clothes. If given toys to play with, as "Mechano Set," asks, "Must I do this?" Everything is an effort.

Two months ago was in the cellar and said there was a big black shadow following him—even pointed it out to his mother in the bedroom, where it was *in front* of him; described it as standing still when he moved. Persisted in this for several days. Wanted to investigate it and got angry that none of the others could see it. Later said it left—wasn't there any more.

Further Incidentals of Pschopathy.

Nocturnal enuresis up to a year ago, constant; now once in a while. Headaches occasionally severe (not of migraine type). Is fearful of the dark and of being alone at night. Once, recently, strongly suspected of sleepwalking. Is supposed to have prowled around his father's shop. There was considerable evidence of this, but the boy denied any knowledge of same.

Etiology.

The heredity appears to be negative. The husband, however, was a sailor (up to the breaking out of war), and it is possible that he took up this vocation because of a trend to instability or a roving disposition. This is frequently but by no means always the case. Hence the *possibility* of the father's having been psychopathic.

The prematurity in the seventh month, weighing 3½ pounds, points to the more probable reason for the brain abnormality. The brain, if undeveloped at time of birth but uninjured, usually develops to the normal after birth—if the deficit is not too great; here the underweight denotes the severity of the condition, and the fact that the head at present is from one-half to three-quarters of a centimeter smaller than it should be (intimating that the brain has not grown to normal size). But this is not all. There must have been a reason for this prematurity and underdevelopment. This surmise is substantiated in the deformity of the nose at birth. There was no point to the nose and the nostril was obstructed on one side; it was thought that the cartilage must be pressed inwardly, or later (age of 4) that a tumor was present. Hence the subsequent operations. (The above facts bring up the possibility of congenital syphilis.)

The nasal obstruction itself may have played a baneful part in the general mental development (restricted aeration, etc., but especially in affecting the attention), also the operations themselves, the wound healing with difficulty. (Aprosexia nasalis.)

At the age of 2 the child fell down stairs. Though not unconscious, he lay quiet for a long time; appeared dazed for several weeks afterward. His mother states that he now seemed to unlearn much that he had learned and had to be retaught. Up to this period she thought him normal, bright and sweet-tempered. After the fall he changed, seemed backward, developed an intense temper in which he would throw himself on the floor, kick, scream and get blue. At times he was almost frantic, "as if out of his mind."

At about this same time the mother had to leave the home in order to nurse her husband, ill at the hospital. In the interim, three months, the child was in the care of an inferior nurse who taught him to masturbate and whose influence was generally bad. The masturbation continued up to the age of four.

Pedagogic History.

The boy has been in several schools (five in all) and in sixteen different classes since entering kindergarten (6. 19. 12.) He thinks mostly in German (the language spoken in his home) and translates to English as he speaks. This is constantly noticed. It is also very evident in his writing, which is extremely poor. One also readily sees that the boy thinks best and quickest in German.

Home Environment.

Very moderate circumstances but rather good surroundings. Mother appears firm and intelligent.

Examination.

Visceral and neurological examination negative, save that coördination of the movements of the left upper extremity is not as good as it should be (especially finger-to-nose test).

General development good. Appearance negative save for the nose which appears somewhat "pressed in." Head girth is slightly below normal—51 centimeters. Palate is abnormally high and somewhat narrow. Teeth are poor, the lower row unevenly planted. (Has abnormal folds at the tonsillar end of the gums?) Enlarged postcervical glands on the right.

Spine shows slight scoliosis (and some abnormality between scapulae?) X-ray negative.

The nasal deformity, high palate and poorly planted teeth are possibly to be looked upon as *stigmata* of hereditary taint.

There is no evidence of endocrinopathy.

There is no evidence of vagal or sympathetic involvement.

Several things suggest syphilis and hence this must *yet* be ruled out: the prematurity, low weight at birth and dysplasia (nose), and the mother having had a still born child in the 6-7 month.

Intelligence.

According to the examination made by both Prof. Heckman and myself, the general average of intelligence is up to the proper mark. As to ethical and moral understanding and feeling, my own tests prove the boy to be quite normal. His answers to my questions were bright and sharp and evidenced real feeling. In fact, asked to tell what good deeds he had already done, his accounts, whether truthful or not, show him to have a better understanding of the hardships of poor people and feeling for this than many a normal child of his age.

His attention is dispersive; concentration very poor.

Diagnosis.

We have in this boy a brain very probably hereditarily invalidated—no doubt, the primary factor. Added to this (and possibly of equal etiological moment?) is the prematurity and, because of the extreme underdevelopment at birth, 3½ lbs., a postnatal development that finally fell short of the full unfolding (incomplete myeloginization, or smallness of cells, or fewer association fibres?) evidenced by the skull (brain) being slightly smaller than normal; possibly, also, by the high, narrow palate.

The fact, however, that this child walked, talked, and teethed at the proper time makes it possible to assume that the brain here *did* reach its full and proper maturity, in spite of the small skull girth, and that the hereditary taint alone must be considered in the above. What this taint was, whether psychopathy, incompatibility of the germ plasms (Moebius), or syphilis, cannot absolutely be said.‡

This already invalidated brain, and therefore less resistant than the normal, is now still further unstabilized by a series of conditions and traumata, namely, nasal obstruction, three or four nasal operations, an unhealing nasal wound (this must have been a very severe drain on the child's attention), a serious fall downstairs (concussion?) a two years' period of masturbation (which may harm a delicate brain organization, but, on the other hand again, may not be of much moment), and evidently an interim of poor or perverted influence in the hands of an inferior nurse—and the lack of parental control during this period—and, finally, an unfortunate pedagogical training with many changes of schools and classes and the boy learning to *think* in German.

Consequent upon all this, we have a *mental abnormality* showing itself here not in a lack of abnormality of intelligence, but in functional deviation in the sphere of emotion, affectivity and will (namely of the character and personality constituents), *i.e., psychopathy*. This boy, then, is a psychopathic constitution and of the affective type ("affective psychopathic constitution").§

Dissociations and occasional hallucinations, as this boy shows, are not infrequent in these individuals. They sometimes also have "large" epileptic attacks—the "affect epilepsy" of Bratz (which our patient however is not subject to).

The unethical tendencies are to be accounted for through psychopathy, that is, little or no inhibition, in this case, of impellants along the lines of least resistance. Such minds react to every wish, whim or suggestion—whether it be right or wrong—and react the more easily under emotion or affect (deeds of violence being even possible in the daze of strong affectivity). This boy thoroughly comprehends the difference between right and wrong and has good general ethical insight and even evidences real, deep feeling. But he has no will with which to act counter to his inclinations and desires. He covers his tracks through lying—lying having become common habit with him. A lively fantasy only adds to the mischief. There is no defect here of any "ethical sense," nor "ethical inferiority," because of mental enfeeblement, nor is this a case of ethical warp through lack of home training, seduction, etc.

The strongly abnormal laziness is an unusual accompaniment and difficult to explain unless it be again a manifestation of lack of will to do aught necessitating effort and not in the line of inclination or desire.

Prognosis.

The case must be looked upon as a serious one, and one in which both special training, treatment and the closest supervision will be needful for a long period of time. Under these conditions, there is a likelihood of the boy evening out into normality. Should this child grow up without such special training, treatment and supervision, his natural course will be the most direct pathway to criminality.

But how dispose of such cases? The institutions for the feeble-minded are not the place for them, for they are not feeble-minded, and would not only benefit in no wise from such a sojourn, but would surely corrupt and contaminate every witless member of the community. Nor is reformatory or prison the place to send them, for though they have perfect knowledge of right and wrong, they are, nevertheless, quite irresponsible for their acts and hence not deserving of punishment; nor does punishment help such psychopaths in the slightest; indeed, it rather breeds resentment in them, fosters desperate moods, and intensifies their already abnormal affectivity. And as for sending them to the asylum, that is, least of all, a fit commitment, for they are not insane, have not even partial trends to alienation, and must needs degenerate and decay in so abnormal an environment.

Through the Children's Court and the benevolence and fine insight of its judges, many such unfortunates are spotted and sent to industrial school farms, and in that way are very well, though not ideally, looked after. But the greatest number do not come before the children's courts and are not individually cared for until they are adults and have grown so mentally awry as to be beyond the stage of educational correction. Both through tax burdens in supporting its overcrowded derelict cantonments and in the actual loss and suffering occasioned by these psychopaths, society pays dearly for its sin in not sifting out its abnormals in their childhood days, when they could still be succored,* and establishing suitable institutions for their temporary maintenance and special training. This for all of us—physician, teacher, justice and citizen—is a most timely problem and a serious and urgent one.

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‡ Even if this boy gives no W. R., his abnormality might be occasioned by syphilis in his ascendants, he himself not being syphilitic. "Thus many a juvenile malefactor has to thank his miserable state to the unstable nervous system bequeathed him by the syphilis of an ancestor." See our study on Hereditary Syphilis, Jour. A. M. A., March 3, 1915, p. 1141. As yet it has not been possible to obtain a W.R. on either the boy or his parents.

§ Should this boy give a positive Wassermann reaction, the diagnosis will be no different, only we shall be informed as to the cause behind the trouble. Antisyphilitic treatment in that case will, of course, be imperative.

* How this can be done in the schools was suggested by the writer some years ago—"Clinical Psychology in Its Relation to the School and to Social Medicine," Med. Record, Nov. 20, 1915.

Book Reviews.

Radium Therapy in Cancer. By Henry H. Janeway, M.D., with the discussion of Treatment of Cancer of the Bladder and Prostate by Benjamin S. Barringer, M.D.; and an Introduction upon the Physics of Radium by Gioacchino Failla, E.E., A.M. New York: Paul B. Hoeber. 1917.

This volume represents the first report of the use of radium therapy at the Memorial Hospital, New York. The author states that while there are many available reports of the use of radium in cancer, a more accurate description of the methods of applying radium to malignant tumors in different situations is needed in order that good results may be duplicated. In his experience the use of radium emanation has greatly increased the efficiency of radium therapy as compared to the use of the metal itself. For a satisfactory understanding of these advantages, as well as the principles of application and filtration, an acquaintance with the physics of radium is indispensable. It has, therefore, been deemed advisable to include in this report an introduction explaining in detail the physical considerations relative to the therapeutic application of radium. The book is well illustrated by eighteen half-tones and diagrams, and is extremely interesting from a clinical point of view.

Diseases of the Chest and Principles of Physical Diagnosis. By George William Norris, A.B., M.D., and Henry R. M. Landis, A.B., M.D. New York: W. B. Saunders Company. 1917.

This book consists of a volume of nearly 800 pages attractively bound, with excellent type and illustrations. The reviewer has nothing but commendation for this book. The numerous illustrations alone make it of very great value. It presents the subjects of pulmonary and cardiac functions from the only logical point of view, the pathological side first, and with this as a basis takes up the clinical aspects of diseases of the heart and lungs. The numerous plates of frozen sections showing the pathological anatomy of the various conditions under discussion, demonstrate more clearly than could be done in any other way, the causes for the various signs and symptoms associated with diseases of these organs. The reasons for the so-called "physiological right apex," for instance, are made clear and distinct, and the causes of the various murmurs in valvular disease of the heart are demonstrated by actual photographs of the diseased valves and by diagrams.

The amount of information given in this volume is enormous, and yet it is divided and sub-divided, so that any student or practitioner can easily find the details concerning the particular subject in which he is interested. It is difficult to imagine how the presentation of this important and difficult subject, Diseases of the Chest, could possibly have been improved upon, and the writers are to be congratulated upon what the reviewer considers a notable achievement. This book may be highly recommended to students, general practitioners and specialists alike.

Manual for Institution Libraries. Compiled by Carrie E. Scott. Chicago: American Library Association Publishing Board.

This monograph, published as Handbook No. 10 of the American Library Association Committee on library work in hospitals and in charitable and correctional institutions, is intended for the instruction of institution librarians without previous library training on the selection, arrangement, cataloging, distribution and preservation of books.

These questions are discussed under the headings: Book Selection (including titles of reliable book lists, paragraphs on book funds, editions, suitability, the proportion of fiction and non-fiction); furniture and fittings; mending and binding; the care and distribution of periodicals; classification, cataloging and loan system, with illustrations of sample book and request cards. Appended is a list of supplies needed in the library with addresses of reliable firms.

Altogether, it is a very complete and satisfactory little handbook, combining, as it does, in practical detail, the experience of all these hospitals and other institutions of the country, which have coöperated with the compilers by answering questions regarding methods and results in their own libraries.

To the untrained hospital librarian (and there are few others) such a handbook is indispensable. Happily, the hospitals are waking up to the importance of a good library as a therapeutic agent, and are learning that, to be efficient, this library must be organized; that without some system the best library is simply a mass of books, while with it, it becomes an important department of the hospital. It is because of a sympathetic realization of the difficulties of the untrained librarian that this Manual has been compiled.

United States Naval Medical Bulletin, January, 1918. Washington, D. C.

This bulletin, published for the information of the medical department of the service, issues an especially noteworthy number for January. An appreciation of Theodor Kocher by one of his pupils, Dr. Arnold C. Klebs, of Washington, D.C., appears in the historical department, and a picture of Theodor Kocher begins the volume. Among the special articles is one by Gaston Houzel Médecin Aide Major I$^{re.}$ Classe, French Army, on "Treatment of Fractures of the Thigh by the Gassette Apparatus;'' another by Assistant Surgeon E. R. Noyes, U.S.N., on the preparation of Dakin solution, and an article by Surgeon W. N. McDonell, U.S.N., on Dakin's Solution and the Carrel Technique for Infected Wounds. The department of progress is especially interesting with its reports on military medicine.

The New System of Gynecology. Edited by Thomas Watts Eden, M.D., F.R.C.S.E., F.R.C.S., Temp. Major, R.A.M.C., Vice-President of Section of Obstetrics and Gynecology of Royal Society of Medicine; Obstetric Physician, Charing Cross Hospital; Surgeon, Chelsea Hospital for Women; and Cuthbert Lockyer, M.D., B.S., F.R.C.S., F.R.C.P., Vice-President of Section of Obstetrics and Gynecology of Royal Society of Medicine; Obstetric Physician to Out-patients, Charing Cross Hospital; Surgeon to In-patients, Samaritan Free Hospital for Women. In three volumes. With numerous illustrations in color, and in black and white. Limited. London: MacMillan & Company. 1917.

This work represents the most ambitious effort in gynecological literature in the English language, and immediately attracts attention. Its scope and the array of contributing editors, under editors-in-chief Thomas W. Eden and Cuthbert Lockyer, arouse hopes of a production worthy of the contributions to Gynecology by British investigators and authors.

In volume I, a number of general topics are treated: anatomy, physiology, malformations, disorders of function, methods of examination of gynecological patients, types of micro-organisms found in the female genito-urinary tract, and infections, sepsis, gonorrhea, tuberculosis, syphilis. There are also chapters on inflammatory affections of the fallopian tubes, and ectopic gestation.

In volume II, diseases of the genital organs are taken up,—of the vulva, vagina, uterus, cysts and tumors of the fallopian tubes, and tumors of the ovary.

In volume III, are considered diseases of the breast, vermiform appendix, infections of the urinary tract, as well as methods of examination of the urethra and bladder, hernia in women, and diseases of the rectum. About three-fourths of the third volume is devoted to therapeutics, chiefly operative, with separate chapters devoted to general gynecological therapeutics, to the x-ray and to radium in gynecological practice.

In a work of this extent, three volumes, fifty authors and over twenty-five hundred pages, there is naturally some repetition or over-lapping of topics, some disagreement and some unevenness in merit of presentation. Not all the views are based on the most recent and thorough investigations. But the standards maintained are unusually high and the work has been produced under trying conditions and deserves high praise. Only six of the authors are from outside the British Isles.

Among the articles which it is especial pleasure to read are Disorders of Function by Blair Bell; Myoma and Adenomyoma of the Uterus, a masterly presentation by Cuthbert Lockyer; Cancer of the Uterus by Wilson, and Chorionepithelioma by Teacher.

The arrangement of the work is not altogether satisfactory and numerous slight changes would be desirable. There are references to some of the most important articles in the literature, and each volume has an adequate index.

The press work is excellent, the illustrations very numerous and the colored plates of considerable, some of great, merit.

In spite of many excellences in the work, the reviewer closes the last volume with a feeling of disappointment because the book does not fulfill the promise of its title, a System of Gynecology. It is comprehensive enough, but not sufficiently systematic nor exhaustive. Each chapter should be a systematic and exhaustive consideration of the subject of that chapter, quite up to date, with a just and discriminating statement of varying views, if there is not unanimity of opinion among authorities, with references to the original articles where these views are expressed. Certain chapters do fully meet these requirements. But too often the text suggests inflation of the usual textbook in Gynecology instead of revealing the insight and the touch of the master.

Clinical Surgical Diagnosis for Students and Practitioners. By F. de Quervain, Professor of Surgery and Director of the Surgical Clinic at the University of Basle. With 604 illustrations and 5 plates. Second English edition. Translated from the fifth edition by J. Snowman, M.D. New York: William Wood & Company. 1917.

This second English edition of 800 pages, and well printed, translated from the fifth edition by de Quervain, contains all that was so justly praised in the previous review of the previous edition, together with nearly 100 new illustrations, revision of all chapters, rewriting of the chapter on Stomach and Duodenum, and the addition of a final chapter devoted exclusively to Diagnostic Problems in Connection with the Military Surgery of the Limbs.

The reviewer considers this book the best single volume on clinical diagnosis with which he is familiar, and can recommend it without reserve to advanced students and practising surgeons.

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The Journal does not hold itself responsible for any opinions or sentiments advanced by any contributor in any article published in its columns.

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ERNEST GREGORY, *Manager,*
126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

MOBILIZING THE PROFESSION FOR WAR.

UNTIL the entire medical profession of the United States, or at least those who are mentally and physically fit and within the age limit, is mobilized within the Medical Reserve Corps of the United States Army, not until then can we give to the Surgeon-General that efficiency which he so badly needs in having a large body of medical officers upon whom to draw.

You may never be called; at the same time your joining the Medical Reserve Corps and placing your services at the command of your country, clearly indicates the patriotism which the medical profession, as a whole, should evince and which we must manifest if we are to win the war.

Every doctor must realize that success depends upon a carefully selected and thoroughly trained body of medical officers. By careful selection, we mean the placing of a medical officer in a position where he is best fitted for the service; and only by having an immense corps or the entire profession mobilized upon a war basis, can we serve our country to the best possible advantage.

This mobilization of the entire profession should come from within the body itself, but every physician coming within the requirements of the service, as to age and physical fitness, should seriously consider this suggestion, and not wait for complete mobilization, but apply at once for a commission in the Medical Reserve Corps of the United States Army.

It is not only for the combatant forces that medical officers are required, but for sanitation, hospital camps, cantonments, and in other departments where the health and life of the forces are dependent upon the medical officer.

We have within the profession a sufficient number of doctors to meet fully the requirements of the Surgeon-General's office, whatever they might be; but to be of service, you must join the Medical Reserve Corps to enable you to meet the appeal which is now being made for a large and efficient Medical Reserve Corps, upon which the Surgeon-General may draw as requirements demand.

THE NEEDS OF THE MEDICAL SERVICE.

UNDER the above caption, Lieut.-Col. R. E. Noble, M. C., U.S.A., presented before the latest meeting of the Southern Medical Association an admirable paper which convincingly answers the many questions asked of the Department, which have caused perplexing hours of thought with many doctors. This communication appears in full in the December issue of the *Southern Medical Journal*, and should be read by every doctor in the country. In a previous paper by the same writer, presented prior to the time that the United States entered the war, as in the above-mentioned communication, Col. Noble said:

"On the medical profession rests a heavy responsibility, for with the medical profession rests the subject of medical preparedness."

This is a particularly impressive paragraph and pregnant with truth, and its meaning should sink deep into the heart of every doctor in America. What was a fact before we entered the struggle is more than a fact now, since we have joined forces with our Allies in a world war, which will be terminated only by the success of our arms.

We have not a sufficient number of medical officers to care for the combatant and other forces now in training. With the new draft soon to be called, and the possibility of the raising of an army of between five and ten million, as has been authoritatively foreshadowed, we would repeat, "On the medical profession rests a heavy responsibility, for with the medical profession rests the subject of medical preparedness."

The responsibility of the medical profession of the United States, and its importance in the successful outcome of the war, cannot be too forcibly impressed upon every doctor who is mentally and physically fit and within the age limit. They are urged to offer their services now.

That the Surgeon-General should have an immense corps of Medical Reserve Officers upon which to draw, enabling him to place the individual where he will be best fitted for the service, is manifestly apparent. This will mean efficiency, and by efficiency alone can the responsibility now resting upon the medical profession of this country be lessened.

Let every physician apply immediately for a commission in the Medical Reserve Corps and thus discharge the responsibility which he owes to his country, his profession and himself.

WAR-RISK INSURANCE.

In conjunction with our previous editorials on the subject of war-risk insurance, comes a letter from the Treasury Department of the United States, in Washington, urging the desirability for all men in ths service, for the protection of their families, to carry war-risk insurance. The letter says in part:

"To safeguard America's gallant soldiers and sailors and their families, it is imperative that our fighting forces avail themselves of the full privileges conferred by the Military and Naval Insurance Act.

For his own benefit and for the benefit of his family, every enlisted man and officer in the Army and Navy should take the full $10,000 of insurance. Insurance of almost $4,000,000,000 has already been applied for, but this great total is only a beginning. America's Army and Navy should be 100% insured.

The necessity of prompt application cannot be emphasized too strongly. Persons in service before October 15, 1917, must apply on or before February 12, 1918. Those who joined after October 15, 1917, have 120 days from the date of enlistment in which to apply.

With the details of this insurance plan you are already familiar. The unprecedented advantages and privileges conferred by the Government and the extraordinarily low cost have been explained to all men now in the service. All that is needed now is vigorous publicity to speed up applications before February 12. In this work your aid is indispensable."

MEDICAL NOTES.

British New Year Honors.—The list of honors bestowed on New Year's Day of this year may be looked upon as a war honor roll. Among those honored with the order of Knighthood are: Sir C. A. Ballance, Sir G. L. Cheatle, Sir T. Crisp English, Sir Archibald Garrod, Sir J. M. Irwin, Sir W. G. Macpherson, Sir J. Maher, Sir W. H. Norman, Sir M. W. Russell, and Sir J. P. Stewart. The following list also contains the names of those who have served their country at home or in the colonies, and of members of the navy and army medical departments who have directly contributed to successes in the field. In the list of new Knights are the names of Dr. Barclay Josiah Baron, Lord Mayor of Bristol, consulting physician to the throat and nose department of the Bristol General Hospital; Dr. Thomas J. Horder, assistant physician to St. Bartholomew's Hospital and physician to the Cancer Hospital, in whose hands clinical pathology has made some valuable advances; Dr. John Phillips, professor emeritus of obstetric medicine in King's College; Mr. Harold J. Stiles, surgeon to the Edinburgh Hospital for Sick Children and to the Chalmers Hospital, Edinburgh; and Major Andrew Macphail, C.A.M.C., professor of the history of medicine in the McGill University, Montreal. Sir George Newman, principal medical officer to the Board of Education, has been made a K.C.B. In the Royal Victorian Order, Sir Bertrand E. Dawson, K.C.V.O., C.B., has been promoted to a Knight Grand Cross; Lieutenant-Colonel H. M. Rigby, R.A.M.C., has been made a K.C.V.O.; and Staff-Surgeon Louis Greig, R.N., a Member of the Order. In the Order of the Indian Empire, Lieutenant-Colonel and Brevet-Colonel H. F. Cleveland, V.H.S., Deputy Director-General of the Indian Medical Service; Lieutenant-Colonel H. Smith, I.M.S., Civil Surgeon at Amritsar; Major H. C. Brown, I.M.S., Director of the Central Research Institute at Kasauli; and Assistant Surgeon Kedar Nath Das, professor of midwifery at the Campbell

Medical School, Calcutta, have each received a Companionship.

Confirmation of California Medical License Act.—The United States Supreme Court has declared constitutional the California state medical practice act, providing for licensing and regulating persons engaged in healing the sick.

British Ophthalmological Society.—The annual congress of the Ophthalmological Society of the United Kingdom will be held on May 2, 3, and 4, 1918, in London, England. A museum will be held at the Royal Society of Medicine, with a special exhibition of perimeters.

London Death Rates.—Mortality rates for the cities and boroughs of London for the month of November show that the lowest rate occurred in Hampstead, and the highest in Shoreditch, the respective rates being 8.5 and 25.2.

Spanish Medical Society in New York.—An association of Spanish-speaking doctors practising in New York has been formed and named La Sociedad Medica Hispania-Americana. The secretaries are Drs. Manual Uribe y Troncoso and Anibal Zelaya.

Longevity in Australia.—*The British Medical Journal* contributes a statement of some interesting longevity statistics from Australia.

"At the census of 1881, children under the age of 15 represented 38.9% of the total population of the Commonwealth, the proportion for subsequent censuses being 36.9 in 1891, 35.1 in 1901, and 31.6 in 1911. At the census of 1881, persons aged 70 and upwards represented 1.3% of the population, 1.5% in 1891, 2.1% in 1901, and 2.6% in 1911. These figures afforded evidence of the increasing age of the population of Australia. The influence of the South African war in 1901 on the age statistics was shown by the fact that, while males between the ages of 20 and 30 represented 20.5% of the total male population in 1891, and 18.7% in 1911, they represented only 17.3% in 1901. The high proportion at this age in 1891 is attributed to the large amount of immigration which took place during the preceding ten years."

American Society for the Control of Cancer.—The American Society for the Control of Cancer issues once a month a bulletin called "Campaign Notes," chronicling the progress of its work. The first number appeared in January, 1918. The Society considers one of the greatest achievements of the past year has been the publication by the Census Bureau of the special report on cancer mortality in the United States Registration Area. The preparation of this report was suggested by the Society, and its statistical experts were frequently consulted in its development.

"As it is unquestionably the most complete and detailed compilation of cancer mortality statistics ever published by any government, the Society feels a just pride in its publication. The report has proved of inestimable value as a source of reference for the members of our lecture staff who have secured copies by application to the Census Bureau in the name of the Society.

The collection of reports of cancer cases submitted by surgeons in the statistical study undertaken by the Society has been continued, and there is now on file at the National Office a very valuable amount of data which, when further augmented, will serve as the basis of important special investigations."

WAR NOTES.

Venereal Infection.—The following communication, printed in the London *Times*, reveals a condition of affairs as regards the proper care of venereal disease among British troops which compares far from favorably with that in practice in the United States Army:

"Sir,—Since the publication of my letter to you on December 27 I have had several more inquiries from Army officers, both combatant and medical, of which the following extract from a letter just received from the front is a fair example:

'I am taking the liberty of asking you for details of the disinfectants you mention. My reason for asking is that medical officers give different answers, and that recently officers have been ordered to speak to their men on these questions. Definite instructions would, therefore, be of obvious value.'

I shall be grateful if you will insert this letter in order that the large number of persons now actively interested in this grave matter may realize the highly unsatisfactory conditions now obtaining in the medical department of the army in relation to the prevention of the widespread infection of our troops by venereal poisons. It is at least possible that some influential persons thus interested and informed may take some steps which will lead to this chaos being reduced to order. I have already tried and failed to persuade those who could take such steps, to make some definite and practical move in the matter. Such advance as is now being achieved is made more or less *sub rosa*. To be really effective against the existing danger, it must be made by outspoken, clear, and authoritative order. I have been personally informed by very many army medical officers of superior rank that, in spite of being thoroughly convinced of the absolute necessity of prophylactic medical measures, they are held back from performing what they feel should be regarded as their medical duty, by the existence of an army order which literally forbids such action.

Surely, if the highest army medical authorities may be restrained from action through either want of encouragement or positive hindrance from the political executive, it is the business of the people and Parliament to force the government to remove this scandal or to justify their attitude towards it.

I am, Sir, your obedient servant,

H. Bryan Donkin, M.D., F.R.C.P.

London.''

BOSTON AND MASSACHUSETTS.

Essex South Medical Society.—The third regular meeting of the Essex South Medical Society was held Wednesday evening, February 6, at the Lynn City Club. Papers were read by Dr. A. R. Kimpton of Boston, and Dr. M. A. Harrington of Danvers State Hospital Staff. Dr. Kimpton's talk was based on the conclusions reached as to the value of transfusion from a series of three hundred cases, while Dr. Harrington, who was formerly a regimental surgeon in the British army, talked on his experiences in the Service.

Week's Death Rate in Boston.—During the week ending January 26, the number of deaths reported was 282, against 272 last year, with a rate of 18.74, against 18.19 last year. There were 56 deaths under one year of age, against 34 last year.

The number of cases of principal reportable diseases were: diphtheria, 115; scarlet fever, 37; measles, 93; whooping cough, 80; tuberculosis, 82.

Included in the above were the following cases of non-residents: diphtheria, 15; scarlet fever, 9; tuberculosis, 10.

Total deaths from these diseases were: diphtheria, 6; scarlet fever, 5; measles, 3; whooping cough, 5; tuberculosis, 29.

Included in the above were the following non-residents: diphtheria, 2; tuberculosis, 2.

Rare Diseases in Massachusetts.—Following is a record of the occurrence of certain rare diseases throughout the Commonwealth during the month of November.

Actinomycosis was reported from Danvers 1, and Westwood 1.

Anterior poliomyelitis was reported from Boston 1, Cheshire 1, Lowell 2, Ludlow 1, Lynn 2, Needham 1, Somerset 1 and Springfield 1.

Anthrax was reported from Boston 1 and Woburn 3.

Dog bite was reported from Boston 2, Brockton 1 and Holyoke 1.

Dysentery was reported from Barnstable 3.

Epidemic cerebrospinal meningitis was reported from Arlington 1, Boston 5, Brookline 1, Fall River 3, Lowell 1, Northampton 1, Salem 1, Springfield 1, Wilbraham 1 and Worcester 1.

Malaria was reported from Brockton 1 and Sutton 1.

Pellagra was reported from Northampton 1.

Septic sore throat was reported from Boston 1, Brookline 1, Chicopee 1, Haverhill 1, Lowell 1, Medford 1, Melrose 1 and Newburyport 1.

Smallpox was reported from Boston 1.

Tetanus was reported from Gardner 1, New Bedford 1, Sterling 1, Westfield 1 and Worcester 1.

Trachoma was reported from Boston 7, Chelsea 1 and Wakefield 1.

Infants' Hospital Fund.—The treasurer of the $25,000 fund being raised for the benefit of the Infants' Hospital announces that $8876 have already been received.

The Boston City Hospital.—The forty-third Annual Report of the Trustees of the Boston City Hospital has been published and covers the period of time from Feb. 1, 1916, to Jan. 31, 1917. The entire expenditure for all departments of the hospital for the maintenance during the fiscal year was $798,553.87. Of this amount $355,873.94 was spent in personal service. There was collected for the care and treatment of patients of all classes the sum of $150,825.10. During the year the facilities of the x-ray department were greatly improved by the subdivision of the rooms by means of lead-protected partitions and by the rearrangement of the apparatus, thus securing more working space and greater efficiency from the equipment. A special room has been provided for cystoscopic examinations. The total number of patients receiving bacterial vaccines was 352; number of visits to the clinic 2562; number of vaccine inoculations, 2348. The total number of patients under anti-syphilitic treatment was 526. Number of cases of syphilis of the central nervous system treated by intradural injection of salvarsanized serum or under observation, 146. The number of patients treated in the out-patient department was 35,867. The work of the pathological laboratory has been enriched by the opportunity of study of poliomyelitis which the epidemic of that year afforded. There was available post-mortem material from over thirty cases. Under Dr. Mallory the study of scarlet fever has been continued and the results published.

Hospital Bequest.—By the will of the late Ellen F. Kennedy of Worcester, Mass., the Worcester Society for District Nursing receives a gift of $5000. The Worcester Memorial Hospital is to share in the distribution of a trust fund.

The Massachusetts Medical Society.

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Miscellany.

A PLAN FOR THE CONSCRIPTION OF PHYSICIANS.

Dr. D. S. Gardner of Ohio has set forth in the January issue of the *Ohio State Medical Journal*, a plan for the conscription of the medical resources of the nation, which is sufficiently detailed and comprehensive to be worth reprinting. He states that:

"I do not urge conscription as a means of supplying the military service with sufficient medical men to care for its needs, but as a just and equitable method of securing a proper distribution of this service between the war-time needs of the present and future and the civilian requirements and educational demands of the future. It is not for a moment contended but that the military necessities have priority—if necessary to the last medical man of the country—but it is hoped that the subject can be systematized so that all the interests may have just representation.

Selective conscription will accomplish this.

Available information is not of a character upon which accurate statistics can be based, but for the purpose of a general analysis we may accept the declaration that the war requirements of medical men are one per 100 men, and that there is immediate need for the Medical Corps of the Army of 24,000 physicians and 120,000 enlisted men. It is further held that there are in the United States 90,000 of military age, 22 to 55 years. It is not at all held that 24,000 will be sufficient. In fact, other sources of information indicate that fully 40,000 will be required if the war be of two years' duration, or if the army should expand to two million men. Editorially, *The Journal of the American Medical Association* has recently said: 'There are in the United States approximately 145,000 physicians, consequently less than one in seven is needed for full preparedness. Is it possible that there shall finally be difficulty in obtaining voluntarily the medical men needed? We cannot believe so. It is inconceivable that conscription of physicians will ever be necessary. But if we are to get the 20,000 on the volunteer system there must be more eagerness for service on the part of the profession than has thus far been shown.'

This, at the moment, seems to about represent the situation.

Now what seem to be the facts? Conceding that there are 145,000 physicians in the United States, this census means the total of all ranks, ages and other conditions. It by no means represents what we are led to believe, that all are able-bodied, or capable of rendering some degree of service. The facts are that the age of physicians is greater than that of any other profession. There are no men in its ranks of 22 years, and it is a safe prediction that the average age is above 40 years.

Admitting that there is no difficulty now in securing sufficient medical men for the service or that there will be none in the future, it should also be conceded that the physical and professional exactions imposed upon applicants for medical service are such as to take out of the profession the practically perfect men only. May not this, then, exhaust the supply of effective men? It is this condition that warrants the plea that a halt should be called upon voluntary enlistments of the medical profession, in order that the greatest good may be accomplished for the military arm of the nation, for the civilian population and the educational needs of the moment.

It has been said that the average age of the medical profession is greater than that of any other profession. Again, upon no other class of men are duties more exacting. In none, probably, is the average of health lower. During the period of this war we cannot hope to replace medical men at a greater rate than 4000 per year, which is barely enough to take care of the civilian population. This rate cannot be maintained under present teaching and conscription conditions.

It is contended that no legislation could be enacted that would make selective conscription of the profession possible. Now we are discussing this only as it affects the volunteer physician in his relation to the present volunteer army and in no wise applies to the regular army.

There was vested in the President, by the terms of an Act of Congress dated May 18, 1917, authority to increase, temporarily, the military establishment of the United States. A study of this Act would, I believe, convince us that it would be possible to readily amend it by Congress, so as to provide the necessary legislation for the selective conscription of the medical profession. This act could provide as follows:

1. *Registration*—That each person entitled to practise medicine under the laws of the several states, territories and the District of Columbia, shall, upon a certain date, register at some point within the jurisdiction provided for the purpose. The data provided in the physician's registration card should, among other matter, contain the following: Name, age, academic degrees, college of graduation, with date; location, with years of practice at each point; admitted state of his health; detailed financial condition, as per a definite schedule; dependence, number of children; nature of practice, if of special character; years of training, with post-graduate teaching; hospital connections; experience, if any, in a military capacity, or in the handling of men.

2. *Administration*—(A) The President would be authorized to create and establish a General Medical Board, for the purpose of administering the act providing for the selective conscription of the medical profession. This board could be composed of the Surgeon-General of the Army, the Surgeon-General of the Navy, the Surgeon-General of the Public Health Service, the President and President-elect of the American Medical Association, the President of The American College of Surgeons, and the President of the American Public Health Association. Those not already provided for should be given suitable rank and pay.

(B) Upon recommendation from the governor, the President could appoint for each state and territory a State Board, which would have general jurisdiction in the administration of the selective conscription of physicians. These boards could be composed of the Surgeon-General of the State, the President of the State Medical Association, with an additional member or more recommended to the governor through the organized medical interests of the state. They would also have suitable rank and pay.

(C) In like manner there could be appointed for each councilor district of the states and territories a board of three resident members of the councilor district, which board would be the initial unit having in charge the operation of the service in like manner with the local boards of the general conscription service. This board could be appointed through the representations of medical interests and have proportionate rank and pay with the other boards.

3. *General Duties*—Rules and regulations, not inconsistent with the Act creating the boards, could be made for the conduct of their business. The General Medical Board would receive from the Army, Navy, and Public Health Departments the assignment of quotas and the allotment of credits, and pro-rate them among the several states and territories. It would have general jurisdiction and be the final source of appeal in all matters relating to the administration of the Act. State boards would receive from the General Medical Board their quota requirements, pro-rate them among the councilor districts, act as an appeal board, and do such things as would expedite the handling of the work within their jurisdiction. The Councilor District Medical Board should have original jurisdiction in its territory of all physicians who registered, or who should thereafter register. Councilor boards would provide the means of and have entire charge of the matter of registering physicians in their district, and have exclusive jurisdiction in their respective areas over all questions to be heard and determined therein under the terms of the Act of Congress and the rules and regulations provided by the President.

GENERAL PROVISIONS.*

The general provisions and operations of the Act would be about as follows:—It would begin with the registration of the physicians of each councilor district, which registration would be under the immediate direction and supervision of the councilor district board. Suitable penalties would be provided for a failure to register. The registration cards would remain permanently in charge of the district. This, when complete, would constitute the roster of the profession for military purposes. Speedily thereafter each physician registered would be submitted to a physical examination. The results of these examinations when tabulated would be to place him in one of four groups as follows:

1. Approximating 100% physical efficiency.
2. Approximating 75% physical efficiency.
3. Approximating 50% physical efficiency.
4. Approximating 25% physical efficiency.

The second effort would be to ascertain, as nearly as possible, the physician's professional qualifications and the nature of his special training, his social and business status, together with the degree of his dependence, and finally his relation to the needs of the community.

With this information at hand it would be possible to assign each member of the profession to one of four classes: A, B, C and D, for service as follows:

1. Active service with the forces at home or abroad. Classes A and B.
2. Active or passive military service in this country. Classes B and C.
3. Active service at home in the care of the civilian population and the educational needs of the medical universities. Classes A, B and C.
4. Passive service of medical men at home. Class D.

It has been made clear that every effort would be brought about to classify the physician: First, as to his physical fitness; second, as to his general and special professional qualifications; and, third, his degree of dependence and the need, if any, of the civilian population in the territory of his practice. If so, it should be easy to see that his services could be intelligently applied as follows:

The General Medical Board would receive from the War Department, as occasions require, the quotas of the medical needs of the volunteer service which could be divided into the following groups:

A. For general medical service.
B. For general surgical service.
C. For special forms of service:
    Orthopedic
    Nervous diseases and psychiatry
    Eye, ear, nose and throat
    Laboratory
    Pathology
    Sanitation
D. For hospital construction and equipment.
E. For base or other hospital superintendence.
F. For teaching in Army and Navy schools, hospitals and cantonments.

The general quotas would be pro-rated to the various state and territorial boards, and in turn by them to the councilor district boards in such numbers and division of service as would secure the filling of the quotas with expedition.

To further extend the detail of this analysis the Act could provide that all matters relating to medical service in the volunteer army should be in the hands of and pass through the General Medical Board having in charge selective medical conscription.

There should be a readjustment of the present Medical Officers' Reserve Corps. Enlistments and withdrawals should be made therefrom so that adequate provision could be had for:

1. The reorganization of the teaching requirements of medical colleges.
2. Reasonable precautions taken to safeguard in some degree the necessary needs of the civilian population.

Attention again is directed to the fact that there are about 100 medical universities in the United States, graduating annually 4000 students, none of which can open its doors with more than a fraction of its teaching force.

If the military demands are to be such as to cause a severe drain upon the number of medical men taken, early provision should be made for the care of the civilian population. To do this it is submitted that the following rules must obtain:

Establish in towns of sufficient size, public dispensaries in charge of Class C and D physicians.

There is no effort made to burden the present outline with statistical data in support of the contention that selective conscription of our profession is necessary to conserve its resources, but the following may be looked upon as quite accurately representing gross totals: There are in the United States approximately 140,000 physicians. The population is 110,000,000. The average age of the profession is above 40 years. The approximate number of active men are 100,000.

Approximate for Class A	40,000
Approximate for Class B	20,000
Approximate for Class C	20,000
Approximate for Class D	20,000
	100,000

Approximate number required for military service, 50,000.

These would be divided as follows:

Class A	30,000
Classes B, C, and D	20,000
	50,000

For the needs of the civilian population, 50,000 divided about equally among the classes A, B, C, D, or one physician to approximately 2500 of population.

These thoughts are submitted for your earnest consideration. The hope is expressed that your conclusions will not be hastily drawn. If the subject is not vital to the interests, first, of our country, then to our people, and finally to ourselves, it is of no value. If, upon the other hand, you feel as I do, then the matter should become one of common effort, to the end that we may secure a proper distribution of this great asset."

ENGLISH PIONEERS IN NAVAL MEDICINE.

To *The British Medical Journal* of December 29, 1917, we are indebted for an account of pioneers in the medical care of sailors of the navy.

"A seafaring nation like the British was naturally confronted early in its naval development with the problems of disease as they affect men who go down to the sea in ships. The subject did not escape the far-seeing mind of Richard Hakluyt, or Hacklewit as his name was generally pronounced and often spelt by his contemporaries. He was not a medical man, but a clergyman; though he modestly called himself simply a 'preacher' he was Archdeacon of Westminster and Chaplain of the Savoy. The tercentenary of his death fell on November 23rd of last year. From his boyhood he had been fascinated by the 'sweet studie of the historie of cosmographie,' and he had a prophetic vision of the important part to be played by tropical disease in colonial expansion, or 'plantation' as it was called in his day. In his dedication to Sir Robert Cecil of the third and last volume of the *Voyages, Navigations, Traffiques and Discoveries of the English Nation,* published in 1600, he refers to an essay on naval hygiene which is probably the earliest English work on the subject. This is a treatise by George Whetstone, which was not long ago unearthed and reproduced in facsimile by Dr. Charles Singer. Notices of the little work appeared in the *British Medical Journal* of November 23rd, 1912 (p. 1481), and November 13th, 1915 (p. 730). Hakluyt says: 'I was once minded to have added to the end of these my labours a short treatise, which I have lying by me in writing, touching *The Curing of hot diseases incident to travellers in long and Southerne voyages,* which treatise was written in English, no doubt of a very honest mind, by one M. George Wateson and dedicated unto her sacred Maiestie. But being carefull to do nothing herein rashly, I showed it to my worshipfull friend M. doctor Gilbert, a gentleman no less excellent in the chiefest secrets of the Mathematicks (as that rare jewel lately set foorth by him in Latine doth evidently declare) than in his own profession of physicke: who assured me that it was very defective and imperfect, and that if hee might have leisure, which that argument would require, he would either write something thereof more advisedly himselfe, or would conferre with the whole Colledge of Physicians, and set downe some order by common consent for the preservation of her Maiesties subiects.' Whetstone was a gallant and a poet who had seen much of foreign parts, and in his travels had picked up some notions of naval medicine. But he was not a doctor; it is no wonder, therefore, that his work was defective and imperfect. William Gilbert, on the other hand, was the foremost scientific man of his time, and the advance of knowledge was greatly delayed by the fact that his scheme never reached fulfilment. Nearly a century had to elapse before there appeared a work entitled *An Account of the . . . Distempers that are incident to seafaring people With observations on the diet of Seamen in His Majesty's Navy,* by the 'Physician to the Blue Squadron of His Majesty's Fleet' (London. 1696). Gilbert seems to have been in high repute for his knowledge of the diseases of seamen. In a recent paper giving an account of his life and work Dr. Singer quotes the following entry from the Acts of the Privy Council under date March 22nd, 1588, when the navy must have been anticipating the arrival of the Armada which appeared off our coasts a few months later: 'Whereas a dysease and sickness began to encrease in her Majesties Navye, for remedie of the dyseased and for staie of further contagion their Lordships thought meet that some lerned and skillful phisicions should presently be sent thether; and for that their Lordships hard that good reporte of the sufficiency learning and care of Dr. Gilbert, Dr. Marbeck, Dr. Browne, and Dr. Wilkinson, as they were though very fytt persons to be employed in the said Navye to have care of the helthe of the noblemen, gentlemen, and others in that service,' therefore these physicians were required 'to put themselves presently in a readynes to goe downe to the Navye, and to carry with them a convenyent quantytie of soche drogues as should be fyt for medycine and cure; and uppon their repaier and conference with the Lord Admyrall soche order should be taken for their entertainement as should be to their contentement.' It would be interesting to know if this scientific mission was ever accomplished, and, if it was, what came of its work.

If Gilbert must share with others the glory of creating naval medicine, he stands alone in fields of scientific exploration which have been of incalculable advantage to mankind. He was referred to by Sir Thomas Barlow in his Harveian Oration last year as a pioneer in the study of magnetism, but he is more adequately described in the *Encyclopaedia Britannica* as the father of electric and magnetic science. His book, *De Magnete,* is the record of eighteen years of patient experimental work, and contains a great number of important observations on the properties of the magnet. He framed a theory to explain magnetic deviation, investigated the dip of the compass needle, and propounded a method of determining latitude by its means. He was the inventor of two instruments designed to enable seamen 'to find out the latitude without seeing sun, moon, or stars.' He founded the science of electricity, and placed it on a solid basis of experimental fact. He also did much work in chemistry, but the records of his experiments have, unfortunately, been lost. He had a hand in the preparation of the first British pharmacopoeia, although the work did not see the light until after his death. This was a misfortune, for he hated everything savoring of quackery, and it can hardly be doubted that his influence would have prevented the inclusion of much fantastic and foolish stuff which found its way into the work. Summing up Gilbert's scientific achievement in addition to his pioneer work in electricity and magnetism, Silvanus Thompson says: 'He also made notable contributions to astronomy, being the earliest English expounder of Copernicus. In an age given over to metaphysical obscurities and dogmatic sophistry, he cultivated the method of experiment and of reasoning from observation, with an insight and success which entitles him to be regarded as the father of the inductive method. That method, so often accredited to Bacon, Gilbert was practising years before him.'

This remarkable man came of a family which was probably connected with Sir Humphrey Gilbert, the famous explorer, and half-brother of Sir Walter Raleigh. He was born at Colchester in 1544, and educated at St. John's College, Cambridge, of which he became a Fellow and mathematical examiner. He took the degree of M.D. in 1569. He then spent some years in travel abroad, visiting Italy, where he made the acquaintance of Giordano Bruno, the martyr of free thought, Sarpi, and probably Galileo. On his return to England he settled in London, where he practised his profession with great success. He lived on St. Peter's Hill, between Upper Thames Street and Little Knightrider Street, where he used to gather together a society or college of men interested in the study of nature. This, Dr. Singer says, may be regarded as the earliest scientific association in England, and perhaps in Europe. Gilbert was successively censor, treasurer, and president of the Royal College of Physicians. In 1601 he was appointed physician to Queen Elizabeth, who trusted him as a doctor, and appreciated his work as a scientific investigator. How genuine was her appreciation is proved by the fact that, although by no means liberal in the matter of money, she gave him a pension to help him in the prosecution of his researches. Gilbert attended Elizabeth on her deathbed in 1603 and was appointed physician to her successor. He lived only a few months afterwards, dying, probably of the plague, towards the end of 1603.

The medical profession may well be proud of this great scientific pioneer."

OCCUPATIONAL DISEASES.

The Department of Health of New York City is taking steps to control more efficiently the incidence of certain preventable occupational diseases. The following notice is published in its health bulletin:

In its work for the reduction and control of the so-called industrial diseases, the Department of Health makes extensive use of the information gathered as the result of medical and sanitary surveys in particular industries and of the results of the medical examination of the workers at the occupational clinics. While this has already yielded excellent results, especially in certain trades, the Department feels that private physicians could be of much greater service in this work than they have been in the past. If physicians would report, as they are required to do, instances of occupational diseases coming to their notice, the Department would undoubtedly be able to pick up many additional clues in industrial hazards than are now suspected.

During the year 1917, a total of 139 cases were reported to the Department of Health by private physicians and hospitals. As can be seen from the following table these related principally to caisson disease, lead poisoning and anthrax. It is improbable that this number represents all the instances of industrial diseases in a city of over 5,000,000 people.

Will not the practising physician hereafter notify the Department of Health of every case of suspected industrial disease which comes to his notice? The information is desired not only for the correction of unhygienic and insanitary conditions existing in some particular shop or factory, but also to gain a complete knowledge concerning the hazards to which industrial workers are exposed in this city. The patients are visited only with the consent of the attending physician, and all information obtained is kept strictly confidential.

While certain diseases, such as anthrax, caisson disease, and lead poisoning almost always prompt the physician to make inquiries regarding the patient's occupation, the fact is usually lost sight of that many common diseases are often directly traceable to the patient's occupation. Among these the following may be mentioned: Tuberculosis, pneumonia, asthma, bronchitis, circulatory diseases, arteriosclerosis, apoplexy, endocarditis, myocarditis, nephritis, diseases of the skin, diseases of the nervous system, orthopedic defects.

Whenever occupation is a factor in any of these diseases, the case should be reported to the Department of Health. It is especially important to report (as required by law) all cases of arsenic, mercury, phosphorus, bronze, wood alcohol, anilin, brass, acids, gases (carbon monoxide, illuminating, natural gas, and others), bisulphide of carbon, wood naphtha.

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THE MASSACHUSETTS VENEREAL DISEASE PROGRAM.

III.

By Eugene R. Kelley, M.D.,
Director, Division of Communicable Diseases.

(*Continued from page 173.*)

Repressive Measures.

Under the term, "Repressive Measures," may be conveniently grouped a number of anti-venereal measures which involve the joint utilization of police power and social agencies.

The most significant feature of modern programs for the control of venereal diseases is their frank recognition of the importance of sane repression, along with measures of education, diagnosis and treatment.

In this field the medical man and the public health official must seek the advice, coöperation, and active help of the judiciary, the police, the penologist, the social worker, and all agencies working towards physical and moral rehabilitation of the ignorant and unfortunate.

For convenience of reference, the principal repressive measures contemplated in the Massachusetts Venereal Disease Program may be listed under these heads:

1. Suppression of prostitution.
2. Venereal control in penal population.
3. The venereal quack problem.
4. Indirect control through the license power of the State.

1. *Suppression of Prostitution.* All workers in the venereal field soon come to recognize the relationship betwen prostitution and the spread of venereal diseases. Prostitution constantly replenishes the great reservoir of venereal infection, or, in the vivid phrase of Major W. F. Snow, prostitution is to venereal disease what the anopheles breeding swamp is to malaria.

Modern expert testimony, both medical and police, is a unit in condemning all systems of segregation of prostitutes, with or without "certificates of health" in connection therewith.

The futility of all systems of segregation can be best seen by noting that in those cities of Europe where it has been most thoroughly carried out, the officials charged with its enforcement frankly admit that only one-fifth to one-tenth of the prostitute class are ever enrolled. The remainder continue to ply their profession vigorously as clandestine prostitutes.

No practical medical or social worker has any illusions as to the immediate or remote prospects of eliminating prostitution. But experience has shown that many measures can be carried out in reference to prostitution by joint action of the courts, health authorities, and institutional authorities which will materially lessen venereal infection and mitigate the evils of prostitution generally.

These measures may be summarized as:

(*a*) Breaking up the alliance between prostitution and alcohol;
(*b*) Repression of street solicitation;
(*c*) Suspended sentence-probation procedures by joint action of judiciary and health authorities;
(*d*) "Follow-up" work by health officials to reach the clandestine prostitute, not amenable to control through the courts, and exercising control over her through quarantine or its alternative—supervised treatment—in an institution if necessary;
(*e*) Imposing of reformatory sentences in appropriate cases;
(*f*) Recognition of the mentally deficient prostitute, and providing proper treatment for her by commitment to an institution for the feeble-minded.
(*g*) Analogous procedures for the confirmed alcoholic or "narcotic" prostitute;
(*h*) Social rehabilitation of the clandestine or immature prostitute by educative methods, moral persuasion, providing material aid through period of treatment, and finding permanent employment for her.

To carry out successfully any such program, there must be close "team-work" among many public and private agencies. The most characteristic feature of this new program against prostitution is the emphasis placed upon prostitution as an epidemiological rather than as a penal problem, and the logical deduction therefrom of seeking to apprehend and treat the individual prostitute primarily as a disease-carrier, instead of officially ignoring her existence. In the Massachusetts program the skilled "follow-up" worker employed by each approved venereal clinic is chiefly depended upon to get in touch with the prostitute patient, unravel her history and epidemiological record, and bring such corrective agencies and methods to bear upon her case as may seem most advisable in the individual instance.

2. *Venereal Control in Penal Population.* The inmates of penal institutions are notoriously subject to venereal infections. Routine Wassermann examinations show very high percentages of positive reactions among the inmates of the State penal institutions. In the county jails and houses of correction, there are constantly numerous short-term prisoners infected with either gonorrhea or syphilis, who serve their brief terms and return to their former homes or haunts as dangerous spreaders of infection as before. A very far-sighted statutory provision exists (Chapter 75, Revised Laws, Section 48), under which a prisoner infected with syphilis may be restrained beyond his term of commitment for the purpose of treatment.

The problem has been to find all the infective prisoners. Legislation designed to accomplish this result has been introduced jointly by the State Department of Health and the State Bureau of Prisons, requiring thorough physical examinations of all inmates of penal institutions committed for thirty days or more.

3. *The Venereal Quack Problem.* No phase of the entire venereal problem calls for a more thorough-going program of repression than that of the venereal quack. It is difficult to use the language of restraint in referring to these pariahs of medicine. But hitherto the State has provided nothing in their place. Unscrupulous as they all are, inadequately trained as most of them are, they have supplied a widespread demand among the venereally infected for some easily located place of treatment, open at hours that fitted in with the patient's spare time. Their treatment has been, for the most part, crude and unscientific, even when it has not been downright fraudulent; but by their unscrupulous utilization of all the devices that the art of modern advertising can conceive, to hundreds of thousands of their defrauded victims they are made to appear as the veritable lineal descendants of Aesculapius himself.

With the establishment of free or low-pay clinics throughout the State, where the highest quality of scientific treatment for venereal diseases is made accessible to everyone, there will vanish the last excuse for the existence of the advertising venereal quack. Fortunately, there already exist ample statutory grounds for suppressing the quack. All that is needed is vigorous action by health authorities and district attorneys to make this unsavory specialty only a disagreeable memory in the history of Massachusetts medicine.

One state, Oregon, has shown the way and completely eliminated the venereal quack from its borders, and what Oregon can do surely Massachusetts can do also.

4. *Indirect Control through the License Power of the State.* In the license power of the State we possess a powerful weapon in the fight against venereal diseases, if only that power can be fully utilized. Among such licensure methods may be included:

(*a*) Control through medical license power.
(*b*) Control through druggist license power.
(*c*) Control through liquor license power.
(*d*) Control through marriage license power.

An amendment to the medical licensing law, passed by the 1917 General Court, places in the hands of the Medical Registration Board of the Commonwealth the power to revoke medical licenses for fraudulent conduct. Through this wise provision, much assistance in the fight against the unscrupulous licensed practitioner, fraudulently specializing in venereal diseases, is expected.

The recent prompt action of the liquor licensing boards of some of our large cities, following reports of conditions by Federal War Department investigators, has been a most happy illustration of what can be accomplished through the license power vested in these boards in reducing the opportunities for venereal infection.

Several states have sought to lessen venereal disease transmission through the enactment of laws aimed at preventing the marriage of the venereal carrier.

One of the most serious of venereal disease problems is the widespread custom of drug-store prescribing, and of actual treatment of venereal diseases, especially gonorrhea, by drug clerks. In the words of Dr. Franklin Martin, Chief of the Medical Section of the Council of National Defense, "treatment of these cases by drug clerks is nothing short of criminal in view of what we now know of the effects of gonorrhea and syphilis. Drug-store treatment is synonymous with no treatment." Because it believes that drug-store prescribing for venereal diseases is a most serious evil, and because it firmly believes that the ethical druggist will welcome any effective measure to mitigate this evil, in spite of the incidental inconvenience such a measure must bring him, the State Department of Health has introduced a bill prohibiting the sale of venereal remedies, except upon a physician's prescription. This proposed law follows very closely the mechanism of the anti-narcotic law already on the statute books.

Correspondence.

VESALIUS AND LOUVAIN.

Boston, January 18, 1918.

Mr. Editor:—

In a report of the librarian of the University of Louvain, referring to the destruction of the University buildings and the library by the Germans, there occurs a statement which may throw an interesting side light on the life of Andreas Vesalius. The passage is as follows:

> "Our collection of incunabula was among the most important and most valuable. We had from 800 to 1000 specimens ...... We kept, in large cupboards, a fine collection of Flemish bindings of the 16th and 17th centuries, of every sort. We guarded the whole with a jealous care for all the precious memorials of the ancient University. Who has not admired the finely-preserved original of the charter founding our University in 1425? Who has not heard speak of the copy on vellum of the famous work of André Vésale, *de humani corporis fabrica*, a copy of which Charles V. presented to our University? The burning of the University buildings has completely destroyed the treasures kept in the library of the University of Louvain. In their night of drunken and murderous orgy the German soldiers spared nothing. Those who have this crime against learning and civilization on their conscience will have to bear, in the judgment of history, a heavy and lasting responsibility.
>
> "P. Delannoy,
>
> "*Librarian of the University of Louvain.*"

In the latter part of 1536, Vesalius returned to Louvain from Paris and there conducted public anatomical demonstrations and lectures and at the same time he began to experiment with China root, a new remedy for pleurisy. The father of Vesalius was apothecary to Charles V. and, in 1538, he presented the anatomist's first plates to the Emperor. In the same year Vesalius published these plates ("*Tabulae Anatomicae*") and in 1543 the "Epitome" of his great anatomical work appeared at Basel as a sort of introduction to and summary of the "Fabrica" of the same year. This work, dedicated to Philip, the son of Charles V., is extremely rare.

According to Ball (Andreas Vesalius, the Reformer of Anatomy), two beautiful copies of the "Epitome," printed on vellum, are in existence. One is in the British Museum and is thought to be the copy which was owned by the celebrated Dr. Richard Mead; the other one is in the possession of the University of Louvain. It was evidently this second copy of the "Epitome" on vellum, which was destroyed when the library of the University of Louvain was burned. In fact, the words "*de humani corporis fabrica*" appear in the rather long title of the "Epitome," this being in harmony with the report of the Librarian of the University of Louvain and with Ball's statement. This vellum copy of the "Epitome" must, therefore, have been in the library at Louvain at least 371 years. Dr. Richard Mead (1673-1754) whose vellum copy of the "Epitome" is in the British Museum, was a scholarly man and could well afford to purchase so expensive a work, since he was the most prosperous practitioner of his time, making as much as £7000 in one year, an enormous amount in those days when the purchasing power of money was seven or eight times what it is now.

In 1544, a year after the publication of the "Fabrica," Vesalius was appointed Court Physician to Charles V. (who was a great admirer of his skill as a surgeon) partly because he had cured Charles of what was thought to be a fatal disease and partly because of the success of an operation (probably a decompression for a fractured skull) on the head of the grandson of the Emperor. Is it any wonder then, that as a measure of gratitude and admiration, Charles V. should have presented to the native country of the Belgian anatomist the fine copy of the "Epitome" which was carefully preserved until the University of Louvain was destroyed during the early months of the World War? At the fourth centenary of the founder of modern anatomy (December 31, 1914) his native University was already a mass of ruins and with it there was destroyed that rare parchment presented by a royal admirer.

Isador H. Coriat, M.D.

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OBSTETRICS AND THE MEDICAL PROFESSION.

Mr. Editor:

I beg a few words comment on the unique appeal of Mrs. Lowell in the *Boston American* of January 11, relative to the new maternity clinic at the Brigham Hospital.

As many of your readers may not have seen the article, I will relate Mrs. Lowell's plans for the uplifting of the people who hitherto have been depending on common doctors for obstetric care:

For the fee of $25.00, Mrs. Lowell and the Peter Bent Brigham Hospital will furnish first-class medical care at the patient's home, including nurses, social workers, etc.

Mrs. Lowell goes on to say that the poor have the best obstetric care (shades of our student days!) being attended by hospital doctors, that the rich can have the best of care if they know enough to hire it, but that the common people are in a bad way.

This line of argument is quite familiar to the profession, originating with a prominent doctor some two years ago. Since that time we have had frequent reiterations of the statements by male and female followers of this doctor.

It would be interesting to the profession to know if the Brigham Hospital is a party to this covert vilifying of physicians, also it would be interesting to know if the purpose of the Hospital is to compete with physicians in the neighborhood.

My understanding of the purpose of the founder of the Brigham Hospital is that it was to be a hospital for the sick poor of Suffolk County.

We all know how far it is from what its founder intended it to be.

Under our present economic conditions there is a real field for help among the unfortunate poor of our city in regard to obstetric care. We all know that up to the time the maternity ward was opened at the Boston City Hospital, that it was impossible to get a free maternity case into our Lying-in hospitals, yet these same hospitals give the public the impression that they are free.

It would be a wise and profitable undertaking for the state to furnish experienced physicians to attend labor cases in families which cannot afford a doctor.

As conditions are now, these cases are attended in most part by students and midwives, notwithstanding Mrs. Lowell's unwarranted assertions, and the lot of these parturient women is not an enviable one.

Very truly yours,

Charles Malone, M.D.

5 Glen Road, Jamaica Plain, Mass.

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SOCIETY NOTICE.

The Harvey Society.—The sixth lecture of the series will be held at the New York Academy of Medicine, 17 West Forty-Third Street, on Saturday evening, February 9th, 1918, at 8.30 p.m., by Dr. J. Gordon Wilson, Professor of Otology, Northwestern University, Chicago. Subject: "The Effect of High Explosives on the Ear."

Dr. F. H. Pike, *Secretary.*

The Boston Medical and Surgical Journal

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Original Articles.

SUGGESTIONS ON THE CARE OF MENTAL CASES.*

BY FREDERIC H. PACKARD, M.D., WAVERLEY, MASS.

I HAVE no theories to advance. My remarks are based on practical experience at this hospital.

Before coming to McLean Hospital I had the privilege of a service in one of our largest and best general hospitals, where I was associated with men of high standing in the medical profession and from whom I felt I had learned the best methods of treatment. I still believe that was so for the most part, but my experience here has shown me that their treatment of delirious cases could have been improved. My experience here has also taught me that there are many general practitioners who make the same mistakes. Hence I am led to take advantage of this occasion to make such suggestions.

In the general hospital a good many delirious conditions arose from various causes. These patients were usually segregated in two of the lower wards where, because of their predominance, they made a striking and lasting impression on me. Some were comparatively quiet, while others needed restraint. I never felt at that time that they were not well cared for. They were kept clean and were given such nourishment as they could be induced to take; which, on the whole, however, was a very small amount, often but a few ounces in twenty-four hours and sometimes but a few spoonfuls. We were not especially concerned, perhaps, because in our mind the one important thing was to produce quiet and sleep. This we tried to do by, and only by, the use of sedative drugs. When the results were unsatisfactory, as they usually were, at the advice of the visiting staff we constantly increased the frequency and size of the doses and added to the variety of the drugs. Bromide, chloral, hyoscyamine, morphine and others were used, according to the fancy of the prescribing physician. We were attentive and persistent in our medication, and sooner or later, but always in a relatively short time, the patients became quieter and weaker and many of them died. We felt badly but accepted it as the inevitable.

Here at McLean Hospital I found a considerable number of similar patients, and when I observed the methods of treatment here it seemed as though the physician in charge was woefully lacking in therapeutic knowledge and might really benefit from my recent general hospital experience. The restlessness, activity and sleeplessness of the patients seemed of small concern to him and he apparently made no attempt to relieve them. No sedative drugs were prescribed. His chief and seemingly only interest was in whether their bowels had moved properly and whether they had taken a sufficient amount of nourishment, and I noticed that to him sufficient meant a considerable amount.

I can still see in my mind a frail, emaciated woman, her tongue thickly coated, sordes on her teeth, with thin and rapid pulse. She could not or would not eat. I was told to tube feed her at once. My suggestion that she was so weak that it might kill her was ignored. The stomach tube was passed, milk and eggs were poured down, although it seemed to me that her protesting struggles would use up what little life was left. She did not die, however, but lived to be fed again and again, and almost with each successive feeding, her pulse improved in rate and volume. She began to gain in strength and weight, sleep came and soon after her delirium disappeared and her complete recovery was rapid. I watched this transformation with much interest and no little surprise, and now for over fifteen years I have seen the same results accomplished many times by the same treatment. I recall only two cases in that time who have died. These were two men whose physical appearance indicated greater resistance than they had, for which reason tube feeding was delayed too long.

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* Read at the Semiannual Meeting of the Middlesex South District Medical Society, held at McLean Hospital, October 10, 1917.

The history of this particular woman was somewhat as follows. She had called in her family physician because she felt tired and nervous and was unable to sleep well. The small doses of bromide prescribed at first, having little effect, were increased and continued until she began to have hallucinations of sight and hearing. She became difficult to manage and hard to keep in bed. More strenuous means seemed necessary and repeated doses of morphine were given. Meanwhile she had taken very little nourishment for a considerable time and practically nothing for a week preceding her admission to this hospital. I do not know just how serious her condition was when the family physician was summoned, but she came here with a typical drug delirium from which she recovered when the drugs were eliminated from her system and her general physical condition had been built up by food. It is very probable that if her family physician had prescribed fresh air and moderate exercise, and had insisted upon and depended upon a liberal amount of nourishment for his sedatives, the patient would have been spared the delirium and the necessity of hospital treatment.

I am sorry to say that this is not an isolated case, but a type of which we get many, and I am still more sorry to say that many times the physician fails to realize how much he is responsible for the condition.

There is another type of case where the physician is not responsible for the initial delirium, but where a similar mistake is often made. Recently, a young woman was admitted who had been delivered of a child some two or three weeks previously. Now child-bearing is usually a more or less exhausting experience. In this particular case it was especially so because vomiting had persisted throughout the pregnancy and the patient came to labor in poor physical condition. Delivery was accomplished without any special difficulty, but a few days later mental symptoms appeared. The patient became talkative and sleepless, and somewhat active. Bromide and morphine were given, but very little food had been taken since delivery; and none at all for four days previous to admission. On arrival she was stupid, knew nothing, and was in a state of extreme physical exhaustion, her pulse rapid and hardly perceptible at the wrist. It seemed probable that she would die, as I doubted very much whether she had sufficient vitality left to use food. She would not eat and was tube fed. It was three or four days before her pulse showed much improvement, but after that she gained rapidly, and at the end of a couple of weeks she was clear enough to recognize and talk with her relatives and strong enough to leave her bed. She is not yet recovered from her psychosis, but her physical condition is good and I anticipate a complete recovery.

These puerperal cases are again a type of case of which we get many and are naturally of interest to the general practitioner. Many of them are of short duration with us, even with the superimposed drug delirium and exhaustion with which we have to contend. I am inclined to believe that if the physician would avoid sedatives and insist upon abundant nourishment, even tube feeding, if necessary, many of these deliria would be aborted in so short a time or would be of such slight degree, that they could be cared for at home.

Let me tell you of another very interesting case. A young woman, in good physical condition, began to feel mean and somewhat depressed, and a little later suddenly developed an active delirium with high temperature and rapid pulse. She was brought to this hospital at once. She had been much constipated and her abdomen was considerably distended. After repeated enemata an enormous quantity of fecal matter was evacuated, and the abdominal distention relieved. My feeling at that time was that with proper regulation of her bowels and a maintenance of her physical condition, the temperature and pulse would soon drop, and she would make a speedy recovery. Prolonged constipation in certain individuals will occasionally produce such a picture. She would not take a sufficient amount of nourishment, and in order to lose no time,—for loss of weight and exhaustion are often rapid in an active condition such as hers,—tube feeding was begun at once. The pulse and temperature, however, did not fall, the delirium continued and within a week it was discovered that she had typhoid. The blood showed a positive Widal reaction. With the liberal amount of nourishment, given by tube, her strength and weight had remained good, and after about two weeks the delirium subsided. She was clear and willing to eat. The liberal diet was continued, and long before the fever subsided she was strong enough to have left her bed if it had seemed wise. When she was allowed to get up, she had lost but about four pounds in weight, a very small percentage for a large woman of one hundred and sixty pounds. She left the hospital soon after and in a short time resumed her work.

In most general hospitals, or cared for by many general practitioners, such a case, refusing food so long, would have lost so much weight and become so physically exhausted, that it is doubtful whether the resistance would have been sufficient to withstand the toxemia, or at best, the patient would have been so emaciated and weakened as to require a long convalescence. I recognize that now-a-days the profession generally have been feeding typhoids liberally, with good results, but, so far as I know, this is limited to those who will eat.

The alcoholic deliria or delirium tremens cases form another large group often treated in general hospitals and with rather poor results, the death rate being discouragingly high. If you are not already familiar with the much more successful treatment of these cases at the Psychopathic Hospital since its opening, it is worthy of your attention. Our experience here is limited with such cases, as it is not the usual policy of the hospital to receive them. The last patient admitted was a young society woman who had been a moderate drinker for some time, but who for some months had been drinking excessively, often to the point of extreme intoxication. She had been rising earlier and earlier for her morning drink until just before admission she found it necessary to rise as early as 3.00 a. m. On arrival she was clear but exceedingly tremulous. While not in bad physical condition, she showed her lack of nourishment; for, like most alcoholic cases, she had let drink take the place of food, under which circumstances the alcohol is always more poisonous and the system less able to withstand the toxemia. She became actively delirious at once. Her hallucinations of sight were extremely terrifying. In short, she was in a condition to exhaust herself rapidly. The alcohol was withdrawn, she was tube fed and put in the prolonged baths. On the second or third day she had several severe convulsions and some lesser ones. This active delirium persisted for about a week, during which time she was without sleep. At one time the weakness of her heart demanded digitalis. Except for this, the only treatment was food three times a day. In spite of the severity of her attack, her strength was sufficiently maintained in this way, and once her delirium was over she made a rapid and complete recovery.

I feel very positive that if we had depended upon what little nourishment the patient might have swallowed, she would have soon become exhausted and died. You will notice that she not only received no sedative drugs, but that the alcohol, the causative poison, was immediately discontinued.

I was recently consulted about a "most peculiar case," as the surgeon called it. The patient had been operated upon for empyema, and had properly been given some morphine after operation. But as he continued somewhat restless, a considerable amount of bromide and some morphine had been continued. The peculiarity of the case was that while his empyema was doing well, he had developed a mild delirium which threatened to become worse. I was unable to see the case as it was at too great a distance, but I have no doubt that, providing his surgical condition remains satisfactory, with withdrawal of the sedatives and with the giving of a sufficient quantity of nourishment, the delirium will soon disappear. In any event I can see no indication for a continuance of the drugs. If the delirium continues, it is due to the patient's septic condition or exhaustion, and sedatives will not help these.

I would like to call your attention to one other case which illustrates how sedative drugs may mask important symptoms. Some time ago, a middle-aged man was brought here in a delirious condition. He was entirely irrational, unable to answer questions or to give any account of any symptoms, or make complaint of discomfort or pain. His temperature and pulse were somewhat elevated. There were no physical signs and it was impossible to determine what, if anything, besides drugs, was causing his delirium. He died a few days later and at autopsy I found an abscess of the frontal sinus which had perforated the inner table of the skull and involved the anterior portion of the frontal lobe of the brain. The history of the case was that, some weeks before, the patient had had a moderately severe attack of influenza. During his convalescence a severe headache had developed, for which, large doses of drugs had been given, and he was brought here some time after the onset of his delirium. It is quite probable that except for the drug delirium, the patient would have been able to make known his symptoms clearly enough to his physician to have enabled the latter to provide such surgical relief as was indicated.

At this hospital a very large percentage of the patients are the so-called manic-depressive excitements, or acute manias. In these we have a real psychosis, not necessarily associated with any physical disease and usually of many weeks' or even months' duration. It is very doubtful if the general practitioner can take proper care of these cases at home. I should advise their removal as soon as possible to a properly equipped hospital. If there is necessary delay in doing so, feed them in the meantime, if they are not eating, but do not handicap the patient or the hospital physician to whose care they are given, by superimposing a drug delirium.

Then, again, we have the manic-depressive depressions or melancholias. These cases, too, are usually of long duration, and it is again questionable whether they are suitable cases for home treatment. Any melancholy patient is potentially suicidal, and it is very often the mild cases, whom an inexperienced person would not suspect, who accomplish their purpose. While the deeper depressions are more frequently recognized as dangerous to themselves, and rightly so, they are often so inadequate and retarded as to fail to act though they have the desire. For this same reason they frequently refuse food, and also with suicidal intent.

If you are obliged to care for the manic-depressive excitements or depressions at home, you will find a nurse trained in a hospital for the insane a great comfort and help. Such nurses are not afraid of the excited cases and they know how to handle them. They are also alive to all the possibilities of danger in the depressed cases. I am often reminded of one of our old Boston physicians who, whenever a delirium developed on his ward in the general hospital, used to call for one of those McLean crazy nurses, and, on her arrival, would stand back and watch with wonder and admiration the fearless and tactful way in which she cared for the patient.

In the manic-depressive excitements, owing to their great activity and lack of sleep, the principal danger is one of physical exhaustion. The treatment here at the hospital is directed towards preventing the exhaustion and adding to the weight. This can be accomplished largely by food. Many eat well. Those who do not are tube fed at once and are fed regularly three times a day. The exhaustion is further combated by use of the continuous baths. Most maniacal patients like to play in water and they usually take readily to the tubs. Here their activity is limited to the splashing of water and much less strength is used up than is the case when, confined to their rooms, they run about, jumping from bed to window sill and back, and pounding on the door. Moreover, the warm water has a tendency to relieve the tension, and the most excited patients frequently lie quietly for hours and sometimes even sleep in the water. As a rule, they get more sleep at night after a day in the tubs. Those of you who have seen the baths have noticed that the rooms are of good size, well lighted and have low windows through which the patient can look out. Such rooms add much to their contentment. The water is kept at 99° by means of a mixer and by constant flow of the water into the tubs, the inlet being at the bottom of one end, and the outlet at the top of the other. Sedatives are useless. Only in large and repeated doses do they have any effect and then only a toxic one such as already described. Moreover, they upset the digestive system, interfering with appetite and assimilation, thereby impairing the usefulness of our most efficient remedy,—food.

Again, in the melancholy cases, our chief aim is to maintain and improve the physical condition,—very many of these cases need tube feeding,—and to guard against self-injury. The general sluggish reaction of the depressed patients with their limited activity gives rise to obstinate constipation, which needs to be corrected and which, when relieved, often leads to improvement of appetite. Many of these patients are also troubled with insomnia. This needs no special treatment, but takes care of itself with the general improvement of the patient. Use is also made of hot air and shower baths, exercises with Zander machines, and out-door sports to help in improving the physical condition. Just as soon as they are able to coöperate, they are given diversional occupations of different kinds, which tend to arouse normal and healthful interests and to crowd out melancholy and delusional ideas.

All the manic-depressive cases tend to lose weight at first, and oftentimes it is necessary, especially with excited cases, to give an extra large amount of nourishment. Sooner or later they begin to gain weight, an indication that recovery has probably begun. The rise of the curve of mental improvement usually follows the rise in the weight curve.

In conclusion, let me say that delirious states arise as a result of exhaustion or toxemia or both. The toxemia may be due to an auto-intoxication or to poisons taken into the system from without. If we bear this in mind, the indications for treatment are clear: prevent or treat the exhaustion, eliminate the toxemia as rapidly as possible and provide strength to combat it while it lasts. This can be accomplished by abundant food and by a careful attention to the bowels.

Sedative drugs only add to the toxemia and handicap the digestive system, upon which we must depend for the maintenance and development of recuperative power. They are irrational and so contraindicated that it is difficult to understand their general use. From questioning different men I find two explanations: one, that they deem sleep the most important thing to gain; as if sleep alone could add strength; whereas, at best, it merely saves what strength one has, a most desirable thing to do, but not in itself enough. A positive addition is necessary, which food alone can furnish. A second explanation is that the family demands results, expects the patient to be quieted. The physician, therefore, must give drugs to preserve his reputation. I have already shown you that the results gained from drugs are not such as to add to anyone's reputation. I believe it best to be frank with the patient's friends and to explain the real situation: the public can be and are being educated. Not infrequently a relative, after seeing a patient grow worse at home with drugs and recover in the hospital without them, is inclined to be critical of his family physician's judgment.

My remarks have been limited to a discussion of the acute recoverable cases. Time does not permit a consideration of the organic and dementing types.

RELATION OF INDUSTRIAL SURGEON TO INDUSTRY AND TO SOCIETY.*

By John F. Curran, M.D., Worcester, Mass.

In 1911 the Norton Company engaged the services of an industrial surgeon. His duties were:

1. To make physical examinations of all prospective employees and reëxamine all physically defective employees and to advise corrective measures.
2. To treat accidents immediately after they occurred and to give subsequent treatments.
3. To make examinations and give advice in cases of sickness.
4. To formulate and control sanitation measures throughout the works.
5. To promote health education among employees.

PHYSICAL EXAMINATIONS.

The best time to examine a man is before he is hired. First, it enables the employer to place a man at the kind of work for which he is best fitted physically. Second, it enables the doctor to advise the employee regarding any defects that he may have and of which he may not be aware. It gives the physician an opportunity to enlist the man's coöperation in making an effort to overcome his defects, where possible, and thus increase his physical efficiency. Third, it prevents the introduction into the factory of men who are undesirable because of severe defects. Fourth, it prevents contagious diseases entering the factory and becoming established there. A complete examination of every employee is, of course, very expensive to the employer, but the several advantages outlined tend to offset the question of expense.

So much for the employer's side; now let us consider it from the angle of the employee. This thorough physical examination has also many advantages for the employee. First, he is informed of any defects which the doctor finds, and is assisted in obtaining relief. Second, he is not given work to do for which he is not physically fitted. Third, he knows that every other man in the factory has had a similar examination and appreciates the fact that he is safeguarded from contagious diseases. Last, he feels that the employer is taking a personal interest in his condition, and that he can go to the plant doctor for further advice at any time. As the average shop employee, moving from place to place, has no family physician, he feels sure that the man employed in the capacity of industrial surgeon must be competent to handle his case.

Some labor organizations have objected to physical examinations on the ground that it infringes on the liberty of the individual. Every shop has its own rules, and the examination is merely one of these. If a man objects to this, he is free to seek work elsewhere.

Another point usually brought up is that it enables an employer to reject a man on account of physical defects when he might otherwise have employed him. This gives the labor organizations greatest concern because they realize that oftentimes certain men would be hired in this same factory were no physical examination required. Here it is necessary to remember that the United States Government established the precedent, in examining candidates for army, navy, and civil service positions. Again, the labor unions fear that information of defects in certain men might be passed from employer to employer, thus making it possible to blacklist a man. They fail to realize that such information is of a professional nature, and secrets thus obtained are as carefully guarded as in a doctor's office.

The examination should be as thorough as that required for a first-class insurance policy, because in the departments of many factories the work is of a hazardous nature. The hospital that is a part of the business institution must be particularly careful in such places. Physical examination prevents a defective man from being put to work in these departments. This benefits the employee because it transfers him to work for which he is fitted, and saves him from the risk of serious accident or illness, which might result in death. It benefits the employer because it enables him to secure adequate protection at the most reasonable rates.

Considering the number of men examined, and the different walks of life from which they come, rejections are few—contrary to the general opinion. Statistics show 3%. The surgeons actually make no rejections. We merely note the man's defects, classify him as an A, B, C or D risk and refer him to the employment department, which accepts or rejects him, according to his probable value. Sometimes the employment manager finds a man too old or physically unfit for the work for which he applies, but instead of rejecting him arbitrarily he finds work for him which is suited to his age and physical condition. A man is definitely rejected if he is blind in one eye, because work on grinding-wheels is particularly hazardous to the eyes, even when goggles are worn; and should he sustain an injury which would result in losing the vision in the good eye, the law would require us to compensate him for blindness of both eyes, even though we were responsible for the loss of only one. A person who is blind in one eye certainly does not want to risk losing the other, and the employer knowing the danger is not willing that he should, aside from the fact that compensation would have to be paid should total blindness result. A man cannot be accepted when his vision is reduced to 1/2 in both eyes, for obvious reasons.

All cases of contagious diseases, including, of course, tuberculosis, debar a man from employment. We ask physicians to lay particular stress on this part of the examination because nothing will disrupt a working organization more disastrously than an epidemic of any contagious disease.

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* Read before the Twentieth Century Club of Worcester, November 10, 1917.

We do not recommend for employment any applicant who has more than a second-degree hernia. Hernia is the bane of industrial surgery. The Latin and the Asiatic races, because of their low social rating, due to lack of education and consequent mode of living, do the most laborious work in our factories. They are most prone to hernia because their diet does not include muscle-building food. When they sustain this injury they cannot or will not work, and an operation becomes imperative, with its resultant loss of time and expense to the employer. Here again the physical examination proves its value. Sometimes a man sustains this injury outside the factory. Were he to aggravate this condition while at work, the company would be held as responsible as if it were to blame for the incidence of the hernia.

We reject all cases of heart disease with disturbed compensation, that is, shortness of breath, swelling of extremities and palpitation.

Varicose ulcer is a menace because certain forms of occupation either prevent entirely or delay the healing. This condition is likely to recur again or to break out in a new place as a result of a trivial injury.

All cases of marked hypertension are rejected because certain kinds of work might increase the man's blood pressure, which, in turn, might induce cerebral hemorrhage. This would make us responsible for his death or incapacitation, as the case might be.

A man presenting a major defect (by major defect is meant a hernia, a heart or lung lesion) is reëxamined every three months, or oftener, if his condition warrants. The reëxamination plays a threefold part; it benefits the employer, the employee, and the examining physician. It enables the employer to have efficient workmen; it enables the employee to keep in such a fit condition that he may earn the largest possible wage, and it gives the physician valuable information as to the conditions under which certain defects do well. It also makes it possible for him to see that remedial measures are intelligently carried out.

The second important division of the industrial surgeon's duties is the treatment of accidents immediately after occurrence. The Workmen's Compensation Act was drawn in order to compensate the employee for injury received in the course of his employment. This compensation was divided into two parts—one a reparation part, which provided medical care to repair the injury; the other a compensatory part, to insure the employee against complete financial loss while incapacitated. The underlying thought in the reparative part of the provision is to alleviate suffering, to produce sound and rapid healing of the injury, and to promote a quick return to work.

The section states that medical service shall be provided for a period of fourteen days, so that the injured workman, even though not severely enough injured to prohibit work, is entitled to medical service. This is not only reparation, but prophylactic.

In Massachusetts there are two recognized methods of complying with this law: first, the employment of a factory surgeon; secondly, the sending of the injured employee to a surgeon employed by the insurance company.

A great advantage in the factory hospital system is this: there is a minimum loss of time. The length of time which elapses between the occurrence of the injury and the time of the first treatment is of the utmost importance. Adequate treatment promptly applied will, in 95% of the cases, result in adequate disinfection and consequent prompt healing of the wound. Statistics show that infection increases in proportion as the time lengthens between the occurrence and first treatment of the wound. In our plant, covering several acres, there would be considerable loss of time and risk of infection to the patient coming to a centrally located hospital, and to offset this, we have established four sub-hospitals. There the minor cases are treated and the men sent back to work. They are examined on the following day by the surgeon on his daily visit. The cases of a more serious nature are given first aid and sent to the main hospital, if the case is an ambulatory one. If not, the surgeon is summoned, and after examination prescribes or renders the necessary treatment. This procedure is always possible because there is a doctor in the plant from 8 a.m. until 6 p.m., and one on call from 6 p.m. to 8 a.m.

Contrast this method with the so-called insurance form! Where the factory is large, they have a nurse; if not, some one who is more or less skilled in the treatment of wounds is selected to render first aid. If, in his opinion, the patient needs further treatment, he is either sent or taken to the insurance doctor's office, provided the severity and extent of the injuries warrant it.

The industrial surgeon classifies his cases into three groups: first, those cases which need absolute rest to promote rapid healing; second, those whose injuries make it impossible for them to do their usual work, but permits work of less exacting nature to be done; third, those whose recovery will not be retarded by performing their usual duties after the first treatment. The industrial surgeon is well qualified to judge in these cases because he knows the man's history, the nature of his work, and can solicit the aid of the foremen in placing the patient in a department where he may earn his wage without risk to himself or loss to his employer.

The surgeon employed by the insurance company is not usually acquainted with the man, nor with the nature of his work, and can decide only one of two things,—either the patient goes back to work or goes home. Often the patient makes his own decision after leaving the doctor's office.

After the first treatment, a man is told to report at the hospital at a specified time, which is determined by the nature of the injury. If he does not comply with this instruction, he is sent for and his condition is investigated, should he be at work. When we find that a man is loafing he is investigated by our "follow-up" man and is brought to the hospital or is visited by the surgeon personally. This is determined by our knowledge of the case and the investigator's report.

Sanitation is another of the difficult problems with which the industrial surgeon must cope. He must see to it that the men work in properly lighted and ventilated rooms and have proper toilet facilities. He has a corps of workers whose particular duty is to keep the toilets and washrooms clean, to supply receptacles for refuse, and cuspidors of such a kind as can be easily disinfected.

Health publicity is a field which offers vast possibilities for the betterment of health conditions in the community through the coöperation of doctor and workman. As it is practically impossible to instruct each employee individually, we issue pamphlets each month on some timely subject in surgery or medicine having some practical value to the workman. These are enclosed in the pay envelope, and are read and appreciated by most of the men. At stated times lectures are given to which the workman may bring his family.

Owing to the increasing interest in social insurance, I have purposely left my discussion of the treatment of sickness until last because these two topics are closely related. It is the duty of the industrial physician to treat minor illnesses. Experience has taught that the prompt diagnosis and treatment of illness may prevent serious disease, loss of time and suffering to the patient, and loss of profit to the employer, due to lessened production. When we find that a man is too ill to remain at work we urge him to consult his family physician. As you know, practically every physician depends on the workingman as his chief means of earning his livelihood. Were this source of income removed, it would seriously menace his practice. This might make the general practitioner antagonistic to the industrial surgeon, and adverse criticism given his patients would tend to reduce our efficiency. After a man has recovered from his illness he must present himself for examination before he can return to work.

Our methods open up vast possibilities in the field of preventive medicine, where everything depends on the individual. Much can be done by education through the schools, by articles in papers and magazines, by lectures and motion pictures, but the most effective means is through direct contact with the individual. After our examination he knows either that he is sound or defective and, if the latter, he receives the necessary instruction to remedy his defects. He knows the type of work for which he is best fitted, and, finally, he knows what a thorough examination is.

If every workman possessed this knowledge we would have a campaign of preventive medicine which would affect the whole country.

* * *

ORGANIZED PROVISION FOR THE CARE OF THE SICK IN MASSACHUSETTS.

By G. E. Whitehill, M.D., Everett, Mass.

The Commission on Social Insurance gave a special hearing for physicians, at the State House, September 26, 1917. One of the questions on which the Commission asked information was:

"To what extent are wage-earners able to avail themselves of free clinics in the State?"

The following data were prepared as an attempt to answer this question in a general way, and were presented in October and November by the author. The data herewith submitted for publication have been somewhat amended by the elimination of most of the items containing estimates since its presentation to the Commission, but with only a few exceptions are substantially as presented on the dates named.

Organized provision for the care of the sick in Massachusetts:

1. State or municipal hospitals, or boards for the care of those dependents requiring help in other ways beside sickness. During 1916, 3% of the population was cared for in this way.
2. Charitable hospitals, dispensaries and nursing associations, organized and financed by voluntary donors, the medical profession co-operating with free medical service, and the nursing being performed by pupil nurses. During 1916 from 12½ to 14½% of the population was aided by this group of institutions.
3. Special hospitals for dependents with chronic diseases.
4. Hospitals and institutions for the care of tuberculosis, contagious diseases, etc.
5. Private hospitals for the care of those who can pay well for all needed service.

The various institutions under group 2 comprise 100 or more hospitals, 39 with out-patient departments, 11 dispensaries and about 30 nursing associations. The aim is to help the large part of the population generally designated as wage-earners.

As a group, these institutions admit patients without regard to race, color, sex, religious belief, or ability to pay. Their purpose is to care for accident cases and those suffering from acute or surgical diseases, whose greatest need of help comes from sickness.

There is, on an average, one institution for every 32,000 of the population, with an invested capital between $45,000,000.00 and $50,000,000.00.

During 1916 one person in eight and one-half of the whole population was treated at a hospital, or dispensary, making a total of nearly 450,000, the aggregate cost being nearly $6,000,000.00. It is difficult to estimate from the published data the average cost of the out-patient and dispensary service. The out-patient service at the Massachusetts General Hospital for 1916 was $0.51 per visit. Using this as a basis for out-patient and dispensary service for the whole state, the average weekly cost for hospital service was $15.70. The average stay in the hospital was two weeks and one day. One person in 26 or 27 of the population (4%) was cared for in a hospital. One person in 12 of the population (8½%) paid between three and four visits to a dispensary, or out-patient department of a hospital. One patient out of three was treated in a hospital free. One patient out of three paid a part of the cost at a hospital. One patient out of three paid more than cost at a hospital. For the Metropolitan group of hospitals and dispensaries, one patient in two was free. Outside this district one patient in five was treated free. For the whole state the average for both being 34% free. The Metropolitan group comprised 7-12 of the hospital cases, 5-6 of the out-patients, and nearly all of the dispensary patients. The service at both the out-patient departments and dispensaries was either free, or merely nominal. Five district nursing associations served a population of 1,200,000, making over 200,000 visits on 2% of the population, one person in fifty being cared for on an average of eight visits.

The income derived from patients visiting the hospitals, out-patient departments and dispensaries, in 1916, was $3,372,000.00, the amount of free treatment being $2,614,000.00, or 43%. For the dispensary and nursing service, more than sixty per cent. was free.

The summary herewith submitted is based on the data published in the 38th annual report of the State Board of Charity for 1916. While the data of many of the hospitals are incomplete in some of the items tabulated, many of the deficiencies have been supplied by the office of the State Board of Charity. When no data were available an estimate was made, based on the general average of the group of hospitals considered. Most of the institutions tabulated are classed as charitable corporations, but by using the service available principally for the needs of wage-workers as a basis of classification there are 89 hospitals mainly for acute diseases, naturally coming under group 2, that served in 1916 approximately 134,000 patients. There are five large hospitals devoted largely to chronic diseases that cared for 2015 patients, on an average of 105 days each, with a total bed capacity of 730.

The service rendered by the South Department of the Boston City Hospital and the Haynes Memorial of the Massachusetts Homeopathic Hospital in 1915, provided for 4469 patients suffering from the common forms of contagious diseases and are included in the totals of the 89 hospitals already mentioned. The average stay was a little over 30 days, and the average cost about $40.00 for each patient. If the same ratio to cost and bed capacity prevailed for 18 smaller contagious hospitals, with a total bed capacity of 574 beds, the service would provide for 5740 patients, at a cost of approximately $224,750. There are six small hospitals with incomplete data, having about 100 beds. Using the average for the acute hospitals of 14 patients per bed, for the whole number, and the average weekly cost of $15.70, there would be a service available for 1400 patients, at a cost of $52,752.

The total hospital service under extended group 2 provides 118 hospitals caring for 142,763 patients.

There were 39 hospitals that maintained an out-patient department and treated approximately 240,048 patients, with a total of 862,527 visits. Eleven Boston dispensaries treated 65,752 patients for 244,468 visits. The combined hospital out-patient and dispensary service totaled 449,054 patients, at a cost of $5,988,406.00.

When giving the proportion of service to the population of the whole state, the estimate of 3,779,033 was used, the same as used by the State Department of Health,—estimated population of Massachusetts for July 1, 1916.

The institutions tabulated do not as a rule care for tuberculosis cases, but some overlapping is inevitable when the available institutions are limited.

Number of nurses registered by Board of Registration of Nurses since October, 1910, is 7363.—Report of Board of 1916.

PRESENT EQUIPMENT FOR SERVICE UNDER EXTENDED GROUP 2.

One hospital, or dispensary, for every	32,000 of the population
One hospital bed for every	375 of the population
*One pupil nurse for every	750 of the population
One reg. nurse for every	513 of the population

While an effort has been made to determine the approximate number of beds available for the care of sickness throughout the state, no rigid classification is applicable to many institutions. By classifying under group 2 several hospitals devoted to infants, a few caring for chronic or incurable diseases, and including the full capacity of two large hospitals with separate departments for contagious diseases, and 18 other hospitals for contagious diseases, we obtain 118 hospitals, with a total of 10,184 beds.

* See Note on page 220.

Institutions classified under group 4 care for tuberculosis and the common forms of contagious diseases. The Massachusetts Anti-Tuberculosis League, under the date of April, 1917, reports 13 state institutions with a bed capacity of 1722 beds, 16 county or municipal hospitals with 1078 beds, and 29 private hospitals, sanatoria, or boarding houses with 551 beds, or a total of 58 institutions for tuberculosis with 3351 beds.

In October, 1917, the State Board of Health reported 21 hospitals devoted to the care of contagious disease, with a bed capacity of 1261, with two additional hospitals already authorized, having a bed capacity of 58.

Complete data for private and semi-private hospitals, comprising group 5, are not readily available. Polk's Medical Directory for 1914, supplemented by data furnished by Alice McIntire, Inspector of Incorporated Hospitals, who also supplied additional data for the hospitals classed under group 2, gives 121 hospitals or sanatoria, with a bed capacity of 3940 beds. Practically all the data were compiled previous to 1914, and it seems reasonable, in estimating the number of beds at present, to increase this number by at least ten per cent., to include natural growth and unavoidable gaps in the records, making the number of beds of a private nature at least 4340. The above classification does not include the Naval Hospital with approximately 250 beds under normal conditions, the Boston Quarantine Station with 300 beds, nor various isolation hospitals throughout the state, which would probably total nearly 1000 beds.

It seems a conservative statement, that under the four groups mentioned, there are approximately 20,000 beds designed in large part to care for acute diseases and that fully three fourths of this number are maintained by private initiative and private funds; the other fourth being maintained by either state or municipal hospitals, devoted to tuberculosis or contagious diseases, both of which are looked upon as matters of public concern.

Besides caring for the unfortunates generally designated as paupers, as well as those convicted of crime, the state cares for a relatively small group of dependents requiring special medical treatment covering long periods. The last printed report of the State Board of Insanity for 1915, page 94, gives 16,436 beds as the capacity of 16 or more institutions, providing for the insane, feeble-minded and epileptics. The report of the State Board of Charity for 1916 shows this board supervised the care of alcoholics at the State Farm, drug-users and inebriates at the Norfolk State Hospital, crippled children at the Massachusetts Hospital School and gave general medical and surgical care to a large group of unfortunates at the State Infirmary, requiring the use of 1200 beds for the four institutions. This last total group requiring approximately 18,000 beds, the number cared for approximating 25,000 patients maintained as public charges.

Dr. E. A. Codman of Boston has summarized the expense of this work in a paper printed in the Boston Medical and Surgical Journal for March 22, 1917.

We quote the following:

"Some idea of the amount now spent in Massachusetts for the care of public health and sanitation, and for the maintenance and care of the sick, poor, and insane may be derived from the following figures:

INVESTMENT IN STATE INSTITUTIONS IN REAL AND PERSONAL PROPERTY.

Report of State Board of Insanity ..	$ 17,610,837.84
Report of State Bureau of Statistics .	4,732,129.53
Report of State Board of Charities State Institutions	6,900,736.94
Certain (802) Endowed Institutions..	121,413,052.21
*Estimated from Report of State Bureau of Statistics. Municipalities and Towns	49,057,612.00
	$199,714,368.52

The annual expenditure for these purposes may be estimated as follows:

Appropriations for State Board of Insanity .... State Board of Charities. State Institutions	$ 6,199,647.91
Certain (802) Endowed Institutions..	15,698,875.44
Report of Bureau of Statistics, Municipalities and Towns	13,730,586.46
Health Appropriation, 1915	385,814.84
	$36,014,924.65

The sickness survey made in Boston in July, 1916, by the Metropolitan Life Insurance Co., reported that 35% of the patients under the care of a physician (Table 8, p. 18) were treated either at a hospital (24.2%), or dispensary, 11.3%.

From a medical standpoint the limitations attending the taking of most sickness surveys, renders the so-called facts, as well as many of the conclusions, open to question.

The Boston Survey records that 51.8% of the cases of sickness (see p. 14) had been sick six months, or more; 25% three years or more; 61.1% three months or more.

This class of patients do not fit in with the acute cases averaging only two weeks' care in a hospital, and are wholly unprovided for in any health insurance scheme so far advocated. They do help to swell the total sick roll used as a basis for computations. On page 11, Boston Survey, the statement is made that the statistics of the Rochester, New York, Survey, very nearly approximate the percentage of acute and chronic diseases recorded in the Boston Survey.

The Dutchess County, New York, survey recommends, for the proper relief of this county, with a population of 88,255; 43.6% urban and 56.4% rural, for all purposes, one hospital bed

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* Note.—If the annual expense is $13,730,586.46, the investment may be determined as proportionate to the expenditure of the State Institutions to their investment.

to every 418 of the population. Massachusetts for a limited part of the service has one bed for every 375 of the population. The same report recommends the services of either a trained or untrained nurse for every 802 of the population. Massachusetts has one registered nurse for every 513 of the population.

Most sickness surveys fail to record either alcoholics or venereal diseases. Feeble-mindedness, alcoholism and venereal disease must be seriously considered in any helpful campaign to eliminate poverty or sickness. The field worker for Dutchess County was able to report only one case of venereal disease out of 1600 cases of sickness. From data on venereal disease supplied by the hospitals, the report recommends one bed for these diseases for every 6615 of the population—7.1% of the whole required for Dutchess County. (See p. 100.) Applying the same ratio for Massachusetts, there would be needed 572 beds for venereal diseases, or 17 beds less than the entire complement of beds at the Massachusetts General Hospital. The same survey recommends one bed to every 3042 of the population for alcoholics. For Massachusetts that would take 1242 beds, and would fill both the Boston City Hospital and Carney Hospital, with only 24 beds vacant. For psychopathic patients, one bed to every 4643 of the population is recommended. This would require 815 beds, and would fill the vacant beds at the Massachusetts General Hospital and Carney Hospital, fill both the Massachusetts Homeopathic Hospital and the Peter Bent Brigham Hospital, and leave over 40 patients on the waiting lists.

Thus five of Boston's largest hospitals would be required to care for the psychopathic, alcoholic and venereal diseases, estimated by the Dutchess County survey to comprise 30% of the necessary hospital service. The capacity of these five hospitals is 2586 beds—over one-fourth of the beds now available in the class of hospitals under consideration.

Note.—The purpose of compiling this summary of the medical work in Massachusetts has not been to cover the ground in any technically statistical way, but to give a general summary of what is being done, hoping that some one with more leisure and statistical skill will cover the subject in the near future more fully. During the past few months a number of valuable compilations have been made by members of the office force of the State Board of Charity, which should make a more accurate and fuller presentation of the subject much easier.

GASTRO-DUODENAL PERFORATION: A NEW DIAGNOSTIC SIGN.

By Martin T. Field, M.D., Salem, Mass.,
Visiting Surgeon to the Salem Hospital.

Anyone who has had much experience with perforation of the stomach and duodenum must be impressed with the ease and certainty with which the diagnosis can be established in the majority of instances,—periods of stomach disorder, then sudden and severe pain in the epigastrium, immediately followed by general abdominal tenderness and inflexible rigidity, the points of maximum tenderness being usually over the ulcer site and the iliac fossae, especially the right. This is particularly true in duodenal perforation. The pulse may not be above 80; the temperature may be normal; there may be no evidence of collapse, yet a positive diagnosis can be made. The symptoms and sequence of symptoms are just as distinctive as they are in acute appendicitis.

The diagnosis, however, cannot always be so simply made. In some cases, the greatest difficulty may be experienced. The history of stomach trouble may be absent; pain may not be of the superlative type and, above all, the distinctive board-like rigidity may not be present.

In some of these cases we are forced to consider many possibilities—appendicitis, pancreatitis, cholecystitis, intestinal obstruction, mesenteric thrombosis, and even non-operative conditions.

There are probably many factors which lead to this confusion; the most important one is that which underlies the production of intra-abdominal pain. There has been much work done on this important subject by Lennander, Wilms, Kast and Meltzer, Ritter and others. The conclusions of all these observers are not the same, but the following views of Lennander have been accepted by most surgeons as conforming most closely to their operative experience.

"Pain does not originate within the abdominal organs, which are supplied only with sympathetic and the vagus nerves. All pains originate in the parietal peritoneum and subserous connective tissue structures, which are innervated by the cerebrospinal nerves. Therefore the stomach and intestines can be crushed, cut or burned without eliciting pain, but irritation of the parietal peritoneum or stretching of the parietal (mesenteric) attachments of the stomach or intestines will invariably cause pain."

Whatever may be the true cause, the clinical fact remains that some of these cases of perforation do not exhibit the profound symptoms seen in other patients and, with the diagnostic aids now at our disposal, the diagnosis must often remain in doubt.

We are told that the proper thing to do, under these circumstances, is to explore, as the patient needs an operation anyway. This course is unsatisfactory for many reasons:

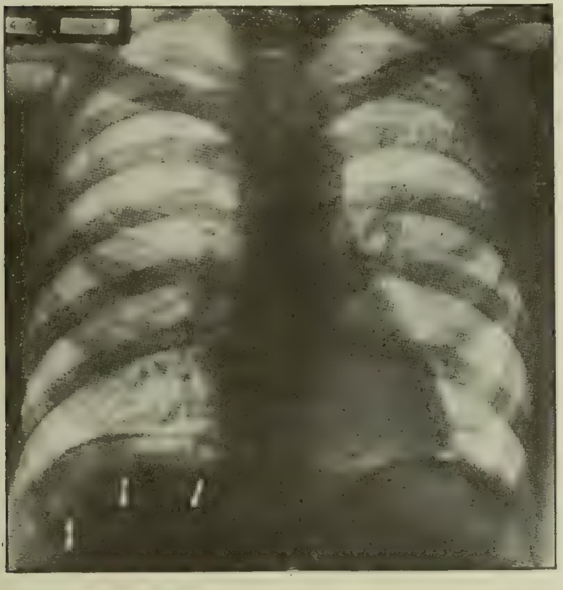
[*] Note.—Dr. Laura A. C. Hughes, Chairman of the Survey Committee of the Massachusetts State Nurses' Association, reports the following as the approximate number of nurses available in Massachusetts Jan. 1, 1918.

Registered Nurses	4942
Graduates, not registered	1760
Red Cross Enrolled Nurses	892
Total	7594
Pupil Nurses 1918.	
Approved Schools (85) No. Nurses	4413
Unapproved Schools (37) No. Nurses	620
Total	5033

1. It is not very encouraging to a patient or his family to know that the abdomen is to be opened, with four or five surgical possibilities in mind.
2. Perforation is surgically more urgent than many other conditions with which it might be confused. Therefore, a diagnostic certainty would often mean less delay.
3. If doubt exists between perforation and some non-surgical condition, it is important to remove this doubt at the earliest possible moment.
4. The placing of the incision, while ordinarily of no great importance, might be a vital matter in the case of an extremely ill patient.

What other aids to diagnosis have we that are independent of parietal peritoneal pain and sensitiveness?—The presence of free air in the peritoneal cavity is surely the most important.

It is safe to say that every perforation large enough to allow fluid to escape, also allows some gas to pass through. When air is free within the peritoneal cavity, in sufficient amount, it may pass between the liver and diaphragm, causing obliteration of liver dulness. X-ray examination verifies this.



Case of duodenal perforation reported by Dr. Walton Martin in *Annals of Surgery*. Arrows point to semilunar strip of lessened density above right lobe of liver, denoting free air.

There seems to be much difference of opinion regarding the occurrence and importance of this phenomenon.

Mayo Robson says: "Liver dulness is generally absent":—on the other hand,

C. L. Gibson declares that "It is a great pity that it is allowed to remain as one of the possibilities of diagnosis."

A. D. Bevan says, "You cannot wait to find free air in the peritoneal cavity obliterating liver dulness. I have never seen a perforating gastric or duodenal ulcer with that sign."

Cubbins states that "this sign is present usually in moribund cases with greatly distended abdomen and paralytic condition of the abdominal muscles."

Rutherford Morison says: "If liver dulness is present at first, and an hour or two later is discovered to have disappeared and become replaced by a tympanitic note, the sign is then one of the first-rate importance. It signifies the presence of free gas in the peritoneum, and a perforation. No other record regarding liver dulness is reliable."

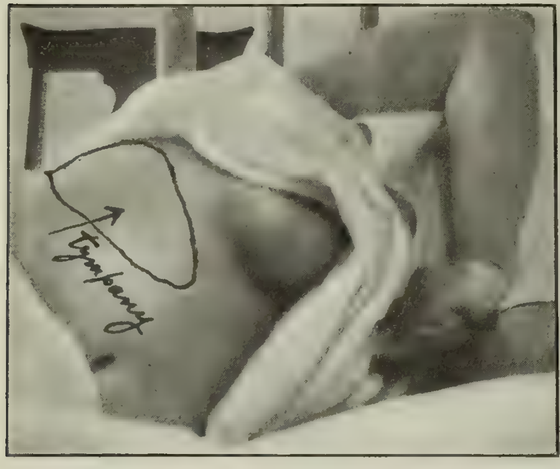
It may thus be seen by the foregoing extracts that there is the greatest difference of opinion regarding the presence and significance of this phenomenon.

There are many reasons why much dependence has not been placed on variations in liver dulness, as these can be affected by a great many factors, both in health and disease. Liver percussion is influenced by expiration and inspiration, by lesions within the pleura and lung; conformation of chest wall, size, shape and position of the liver, tympanites, etc.

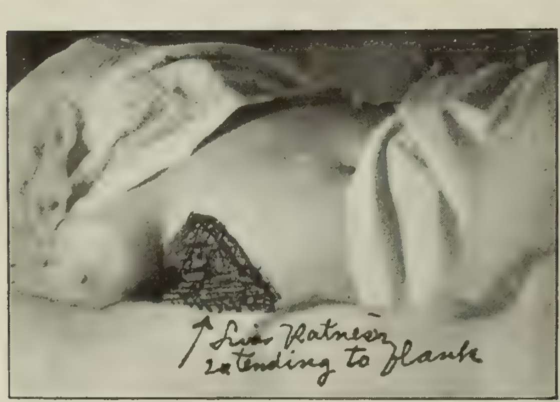
It is evident, therefore, while every one admits the great clinical significance of free air in the peritoneal cavity, that the great problem is to detect it, and not be misled by the multitude of conditions that influence liver percussion.

As has been stated before, x-ray examination shows that in perforation, air does collect between liver and diaphragm; abundant clinical evidence also proves that obliteration of liver dulness does occur. A previous report of mine shows that this may occur within the first few hours after perforation and with a rigid abdomen. Further study and experience have led me to the conclusion that *obliteration of liver dulness is not so much absolute as relative, and depends much on the position in which the patient is examined;* this practical point may be of the greatest value in differential diagnosis. The following interesting cases support this contention.

Case 1. Female, age 44 years; much emaciated. Sitting on kitchen sofa when first seen. Declared that two hours previous to my visit she was seized with very severe abdominal pain, but was now feeling much better. Pulse 86, temperature 97°. Moderate tenderness over whole abdomen, more marked in the epigastrium; muscular rigidity not pronounced. Percussion over the liver in the anterior axillary and mammillary lines showed tympany throughout. This, of course, added greatly to the evidence in favor of perforation even though her symptoms were in no way typical. To be certain that no mistake had been made regarding liver tympany, the liver region was percussed again, and to my surprise, instead of getting tympany, marked flatness was obtained over the same area. At first I could not understand it, but it soon occurred to me that the difference in findings was due to the difference in the position of the patient. The examination was repeated several times, first on one side, then on the other, always with the same results. The reason, of course, was quite clear. With the patient lying on her left side, the fluid which is always present in perforation, flowed away from the under surface of the liver to the most dependent part (left side) while the gas arose to the top, accumulating between liver and diaphragm, causing the tympany instead of liver dulness. When she was on her right side, the air became uppermost (left side) while the fluid gravitated to the under surface of right lobe of liver and Morison's pouch, thus *intensifying* liver dulness. The diagnosis of perforation was made and, at operation, a large gastric perforation with a considerable amount of gas and fluid was found.



Air between liver and diaphragm causing tympany, patient lying on her left side.



Liver flatness continued into the flank caused by gravitation of fluid, the air rising to the top. The patient is lying slightly on her right side.

CASE 2. Male, age 24 years. This was a typical case of perforation; the initial pain and board-like rigidity were well marked. Percussion over the liver revealed the same findings as in the previous case. Tympany over the right lobe of the liver when the patient was on his left side, and this was replaced by flatness which extended well below the 10th rib, when he was lying on his right side.

Operation disclosed duodenal perforation.

CASE 3. Male, age 44 years. This extremely interesting case was seen in consultation, patient having been ill for over three days. The attending physician stated that the onset of the trouble was sudden and accompanied by severe pain and tenderness over the entire abdomen, muscular rigidity being marked.

At the time of my visit the abdomen was quite soft, gall-bladder region excepted. There was some tenderness over both iliac fossae, but tenderness was most marked in the epigastric and right lumbar regions. The diagnosis, "gall-bladder or a high appendix," was not an unreasonable one. It seemed to me, however, that a perforation should also be considered. Liver percussion brought out the same findings as reported in the other two cases. Therefore, a definite diagnosis of perforation was made. At operation a hole in the first portion of the duodenum, large enough to admit the end of a curved half length was found and repaired.

SUMMARY.

1. The diagnosis of perforation of the stomach and duodenum must many times remain in doubt unless aided by some distinctive and reliable sign, independent of parietal peritoneal irritation and tension.
2. In every case of perforation, gas and fluid are present in varying amounts in the free peritoneal cavity. The gas may pass between the liver and diaphragm, as shown by the x-ray, and cause obliteration of liver dulness.
3. Much dependence cannot be placed on liver percussion as ordinarily practised, because of the very great variations, both in health and disease.
4. Change of patient's position will cause the fluid to flow to the dependent part, and the air to rise to the top. *This will intensify the findings;* tympany over a wide liver area and again flatness over the same area on change of position.
5. Normally there is a change in the liver percussion note on change of posture. This was noted in a large number of normal cases examined, but in none of these were the results similar to those found in the cases reported. Normal liver changes must be recognized before positive deductions are made. A fair comparison is the difference detected in shifting flank dulness in moderate ascites and in the normal abdomen.
6. The writer believes that this sign is of considerable value, and should be sought for in every case. If absent, in the presence of other positive signs of perforation, it may be disregarded, but if present in doubtful cases, it may be the deciding diagnostic factor.

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DIFFERENTIATION OF STREPTOCOCCI.

BY D. M. LEWIS, M.D., NEW HAVEN, CONN.,
Epidemiologist, Board of Health.

THE voluminous literature of laboratory differentiation of streptococci demonstrates that an immediate working knowledge of the various types is impossible for the epidemiologist. Should there be applicable to the field worker even a rough differentiation on the basis of morphology only, an immediate need could be supplied. That such is the case is suggestive from my observations of the past few years.

Based on corroboration of cultures and physical examination, I have shown that, morphologically, a streptococcus gave us a working basis as an aid in the control of scarlet fever.[1] My experiences since that time are in accord, both in cases and suspected carriers. In isolated instances the tentative diagnosis as between scarlet fever and grippe was favored from the findings, and apparently was correct from the later course of the disease, as well as other family infections following. Its presence during convalescence in isolated instances was confirmed by confirmation of finding missed cases.

At the time I pictured a streptococcus which I stated had been found in cases of measles only. Since that time I have found the streptococcus in the examination of routine cultures and several hundred special cultures for nasal carriers (special because the cultures were from other than ordinary head cold noses), in but three instances. One was in a case first called diphtheria, then scarlet fever, but which showed the German measles rash and throat of a grippe, and who had had measles some three or four months previously. Two others were found in neighborhoods where there was measles present and where, with the isolation of and the treatment of the two, both of whom had had measles the previous season, there followed an absence of further found cases. While these cases are too small in number to be more than suggestive, its relative infrequence and the need for finding the nasal carriers of the disease before they give rise to any frequency, bespeaks for the finding a thorough trying out.

There are two other varieties of streptococci which, from a morphological viewpoint, have given me satisfactory results. With the simulation of diphtheria, where both case and nasal carrier showed a streptococcus, I followed the epidemic of grippe, with its numerous sore throats, by cultures. Extending through the year following, I have found the following: The frequent finding of a Gram-positive, medium-sized streptococcus, usually in straight chains of varying number of constituents, has led to the usual finding of chronicity of recurring sore throats, without other illnesses being found in the other members of the family previously, during or following the case. Physical examination shows an absence of the edema or the amount of general mucosal inflammation, characterizing the classes to be described. The findings in the throats simulating diphtheria, scarlet fever and measles are a Gram-positive streptococcus, generally much coarser than the ordinary type mentioned, even to forms as large as the streptococcus S described in scarlet fever. The nasal carriers in the family have given the same type. A notable finding during the past few months in the routine search for diphtheria carriers by inspection of children's nares has been a not infrequent finding of such an organism on the first few cultures. Later, as the region of the middle turbinate is opened up after softening of the anterior crusted portion, I have been surprised to find pure cultures of diphtheria. The reverse has also happened in isolated instances. Two of the most tedious diphtheria carriers to cure, showed, after obtaining a clear passage of the anterior nares, cultures of the streptococcus. After seeing from the spinal fluid of a polio case a very different type of streptococcus, I began to watch for and investigate any such findings. Gram-positive, of a distinctly diplococcal as well as diplo-streptococcal form, I have recorded finding in conjunction with simulated diphtheria, though less than the first form mentioned. Smaller than the usual ordinary streptococcus, larger than that found in measles, it is evident in the diplo-streptococcal form. I have found it in nasal carriers, and those carriers on examination are a similar picture to a diphtheria carrier, though leading me back to premises where polio was present.

What are the limitations of such findings? None, during a consecutive period of two years. Investigation of the case or the carrier has shown that in the immediate family in both the latter types of streptococci, or in the neighborhood children of the same age, case and carrier, when they had the freedom of the neighborhood, they apparently gave rise to cases of infectious throats, laryngitis, pneumonia, malaria, impetigo, infective epidemic jaundice, glandular enlargements, as well as simulating the diseases we have mentioned and typhoid fever. A frequent strict isolation of the carriers, as well as the continued nasal treatment of all such carriers found, would seem as rational as for the carriers of so-called contagious diseases, when looked at from two standpoints: first, the demonstration of what follows in families of such carriers; secondly, what happens when we restrain and treat such carriers, not only when found in connection with family illness, but, better, as we are now doing—before we know of any family illness. This has happened: an increased school attendance and, more important, a lessened frequence of reported cases and deaths from each and the sum total of acute infectious diseases, in comparison with the seasonal and epidemic relation to other cities of the region under similar conditions. I have stated that from isolated instances I am of the opinion that the control of mumps and chickenpox lies definitely along the same lines. Limitation of time and assistance has not permitted their investigation. There has been one other limitation, which should be possible for communities with proper facilities to overcome. It is that the laboratory shall take up the subject of differentiation as already determined, in relation to not only these types which lead us to demonstrable pathological carriers and cases in the field, but that the type or types which do not lead back to contagiousness shall be definitely placed as well. This problem is part and parcel of the control of pneumonia as well. What the field investigation of diphtheria has shown to be true in the diagnosis and control of that disease may well be reasonably true of these other diseases.

REFERENCE.

[1] A Laboratory Aid in the Diagnosis of Scarlet Fever, THE BOSTON MEDICAL AND SURGICAL JOURNAL, February 1, 1917.

Clinical Department.

SEVERANCE OF THE CHORDA TYMPANI NERVE.

BY IRVING SOBOTKY, M.D., BOSTON.

Otologist and Laryngologist, Long Island Hospital and Berkeley Infirmary; Aural Clinical Assistant, Massachusetts Charitable Eye and Ear Infirmary.

THE following case has been reported because of the extreme rarity of injury to the chorda tympani nerve during a paracentesis of the tympanic membrane.

The chorda tympani nerve leaves the facial nerve near the stylo-mastoid foramen, enters the tympanum at the base of the pyramid and arches forward and across, between the handle of the malleus and the long process of the incus to an opening internal to the Glasserian fissure. It is invested by a reflection of the lining membrane of the tympanum.

From the Glasserian fissure it descends between the two pterygoid muscles behind the middle meningeal artery and in close relation to the auriculo-temporal and inferior dental nerves and blends with the lingual branch of the inferior maxillary nerve.

The chorda tympani nerve has no control over the muscles of the tongue, but excites sensations of pain and taste, perceived chiefly at the side and the anterior two-thirds of the tongue. It also provokes secretion from the sub-maxillary, and in less amount from the parotid gland, according to animal experimentation.

Schulte, in 1885, reported a case of severance of the chorda tympani nerve during the removal of a polyp from the left middle ear with a sharp curette. A loss of feeling and taste of two-thirds of the tongue followed.

Wolf, in 1890, reported a case of injury to the chorda tympani nerve in a man, as a result of a paracentesis. Immediately after the incision the patient said he experienced a peculiar sensation, or rather, absence of sensation upon the left side of the tongue. The next day he declared that everything he ate was apparently without salt, and whatever came in contact with this particular side of the tongue tasted the same.

The writer's case was seen at the Massachusetts Charitable Eye and Ear Infirmary.

E. F., age 66. June 6, 1917.

Diagnosis.—Right otitis media, acute.

The usual paracentesis was done. She was seen again on June 8. There was a moderate discharge from the right ear, and upon wiping away the pus the paracentesis opening was seen. It was wide and a bit anterior. She complained of inability to taste and of a numb feeling over the right side of her tongue. A probe examination showed insensibility to touch. An otoscopic examination of the left tympanum showed a thin membrane, and the chorda tympani nerve as a faint line situated lower than normal. It is fair to assume that the nerve on the right was also lower than normal. This accounts for the injury.

The patient was then referred to the Nerve Department of the Massachusetts General Hospital. Dr. J. B. Ayer reported that tests with solutions showed no taste in anterior one-half to two-thirds of the tongue on the right, except, possibly, at the very tip. Taste was present on the right posterior one-third.

Society Report.

THE NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS.

A CLINICAL session of the Society was held on Wednesday, Oct. 10, 1917, in Boston. The following cases were shown and discussed:

1. SCLERODERMA.

Presented by DR. CUMMINS.

Female, age 18. Duration, two years. Started as a small "pimple" on right cheek and remained as such until four months ago, when process began to spread, and has gradually increased in size, and today area extends from just below eye to about one inch above ramus of jaw, and involves half the cheek. Central portion is finely scaling, and the edge shows typical violaceous color. The whole area is very firm to touch.

Patient first seen in clinic Oct. 6, 1917. Has received no treatment as yet. X-ray therapy suggested.

Dr. Towle said that the whole process suggested the action of some low-grade parasitic organism, and asked Dr. Cummins to take a culture or remove a piece of tissue at patient's next visit.

2. DIAGNOSIS (?).

Presented by DR. BLAISDELL.

An Italian male cook, 34 years of age, presents a very striking cutaneous eruption of three months' duration. The scalp, face, neck, and the upper trunk are affected. The patient states that process started on the scalp and at first spread slowly, but during the last three or four weeks the progress has been distinctly more rapid. The primary lesion seems to be a pea-sized, sharply bounded, maculo papule covered with a distinctly moist, yellow crust.

The striking feature of the eruption is the disposition of the lesions, which on the forehead make a continuous line like two joined, inverted "Vs," while elsewhere the distribution is circular, as one so often sees. In these circular areas there is no sign in the center that the disease has ever been present, for the skin is normal in all respects, showing even no color-change at present. Apart from these striking, geographic figures, there are scattered lesions of irregular shape, but of the same inflammatory type.

The superficial nature of this whole process is noteworthy, and under the microscope there is nothing to be seen in the corium but the usual inflammatory changes about the superficial vessels and follicles. The rete, however, is edematous; the nuclei are pressed up against the walls of the cells, leaving vacuoles in their places, and the layer as a whole practically refuses to take the basic stains. Examining the scrapings in KOH, under the microscope, there is revealed a definite mycelial growth, which Dr. Rowland Thaxter of Cambridge pronounces an oidium.

The cultures made from these scrapings are positive, and present, on microscopic examination, the same organism just described. This case is certainly most unusual and is still under study.

3. Fibro-sarcoma.

Presented by Dr. Blaisdell.

Female, age 13. Patient first seen in clinic last July. Duration, several years. Process began on left upper arm. Now shows twenty to thirty lesions, most of which are pinpoint, pigmented spots. Many of them are infiltrated and the largest one is bean-sized. Two minute lesions on right arm.

Patient was admitted to Ward G in September, and Dr. Burns excised the large fibromata. The smaller ones have not been treated as yet.

Pathological Report.—Microscopic examination shows a tiny tumor infiltrating through corium, which is composed of undifferentiated spindle cells. There are occasional mitotic figures.

4. Prurigo.

Presented by Dr. Cummins.

Female, age 21. The disease has existed since early childhood. Face, arms, legs and trunk involved. Skin infiltrated, pink red, excoriated and papular. Marked pruritus complained of.

Child undeveloped. Disorders of menstruation. Several Wassermanns taken while in Ward G last year. Wassermanns vary from negative to moderately positive. Thyroid enlarged, fine tremor of hands, tendency to hyperhidrosis. Condition improved under KI. and ovarian extract.

Patient did not carry out treatment prescribed during the summer, and she returned to clinic two days ago with an acute exacerbation of process and was readmitted to Ward G.

5. Prurigo.

Presented by Dr. Cummins.

Female, age 14.

Has had the cutaneous outbreak since early childhood. Face and arms involved. Patient has been under treatment at the clinic for five months. When first seen in clinic, skin was markedly infiltrated, excoriated, pruritic and papular. Process always worse in summer. Has been in the ward for study.

Patient reacted to proteins and Dr. Turnbull is giving her injections of meat extracts at weekly intervals. She has shown a marked improvement. Skin is only slightly infiltrated, pruritus is diminished, and there is no papulation.

6. Dermatitis Exfoliativa.

Presented by Dr. Blaisdell.

Female, age 49.

Patient was born in Massachusetts and has always lived in this State. August 1, 1917, was admitted to Ward G.

Onset about nineteen months ago, beginning as an erythematous scaling patch on palm of left hand. Process soon spread to feet and rapidly involved the entire body. Since onset there have been series of eruptions of four to five weeks' duration, during which time the entire body is in a scaling condition, clearing up for three to seven days and then relapsing. Attacks of scaling are ushered in by severe headache, watering of the eyes, severe chill running from a few days to a week; nausea and malaise.

During periods of scaling, the entire body is involved, including the scalp, the hands and feet showing smaller but coarser scaling. There is also a darkening and shedding of the finger and toe nails. The feet have been covered with thick, yellowish crusts. Both hands and feet are edematous, the motion being markedly limited. At times the itching is intense, the entire body being hot and tense. At times the body has a sense of rawness. After an indefinite course, the scaling ceases, the skin becomes softer and is erythematous and presents yellowish pigmentation.

When first admitted to house, was given starch baths and Fowler's solution. Patient placed on the D.L. the first two weeks of September. Is now having powder treatment, and is showing slow but steady improvement.

7. Dermatitis Exfoliativa.

Presented by Dr. Blaisdell.

Male, age 62. Patient has been in the house since August. (Note made at time of admission.)

Duration, six months. The process is practically universal, the back, chest and abdomen being least involved. For three years has had a chronic psoriasis of arms and knees. Last April the skin became red and irritated, and in spite of using "unguine" and "poslam" the present trouble resulted. Arms and legs are swollen, red, and covered with thin scaling. The scalp presents fine, branny, dry scaling. Skin in general is dry, rather coarse, and of a reddish-brown color, being more pigmented in areas, notably the extremities.

The scaling is practically universal, being rather fine, dry, and branny over the face, neck, upper arms, trunk and thighs. The forearms and hands are more markedly involved, the scales being larger, thicker, and slightly greasy in character. The extensor surface of the legs presents scaling of an almost crusting nature, which is brownish yellow in color and quite adherent. The palms and soles are somewhat thickened. The dorsum of the feet is somewhat edematous. Itching is very troublesome.

Patient has much difficulty in keeping warm, but otherwise is fairly comfortable. During stay in house has been under powder treatment and has shown slow but steady improvement.

8. Keratosis Follicularis.

Presented by Dr. Blaisdell.

Female. Patient was seen by Dr. James C. White in 1889, who made a diagnosis of keratosis follicularis. Father similarly affected.

Patient first noticed eruption when five years old, at time of vaccination. States that the skin of face gradually became darker and rougher and thicker, and her mother used to scrub her to try to get it clean. During childhood process was limited to face, but started to spread when she was eighteen years old, and now involves the face, ears, scalp, neck, sternum, back, left thigh, and plantar surfaces of feet. Lesions are more marked on face. There, there is much thickening of the sebaceous follicles, considerable hyperpigmentation and roughening. The back, between the scapulae, shows similar lesions in the early stages of development.

Patient says process itches and tingles if she gets excited, and when she becomes heated blister-like lesions form under the skin. Cold weather does not affect her, but says she feels the heat more than other people.

Disease slowly progressive; no epithelial degeneration.

9. MYCOSIS FUNGOIDES (?)

Presented by DR. BLAISDELL.

Female. Process started twenty-two years ago on face, and cleared up in six months. Since then has had occasional attacks lasting several months, for years. As she became older she began to have attacks every two or three months, lasting three to six weeks, being bedridden at times. Up to one year ago process was confined to face, but since then there has been universal involvement. There have been no remissions during the past year. Itching is very severe.

The hair is largely gone, the eyebrows are wholly gone, and the disease involves the whole of these areas completely. There is great infiltration. The body is covered with excoriated papules. Lesions are circular in outline and well demarcated. They are dusky red in color, for the most part with some yellow scaling, and the periphery is of a brighter red color.

The loss of hair in the scalp and the somewhat papillomatous ulcerations over the temples make one think of a possible premycosis condition.

Biopsy taken. No report as yet.

X-ray. Wash 2.

Book Reviews.

Occupational Therapy. By GEORGE EDWARD BARTON, A.I.A. Director of Consolation House. New York: Lakeside Publishing Company.

In this small volume of ninety pages the author has gathered together various addresses which he has made and articles which he has written on the general subject of occupational therapy. Their titles are: A View of Invalid Occupation, Occupational Therapy, Occupational Nursing, Occupational Therapy and the War, Occupation and Auto-Inoculation in Tuberculosis, and the Movies and the Microscope, last being a discussion and explanation of the Simultaneous Cycle Motion Charts used to study methods of efficiency in manufacturing establishments, by means of taking moving pictures of operators at work. Mr. Barton is a firm believer in the necessity of bridging the chasm between the time that a patient is discharged from a hospital and the time that he is in fit condition to return to his employment. In this interim comes a period of idleness and discouragement and corresponding delay in return to complete health that must be reckoned with by healers of the sick, if they are to perform their greatest service to humanity, and it is here that properly supervised occupation becomes efficacious. The author writes in a simple, conversational style, easily read and appreciated.

Ligations and Amputations. By A. BROCA, Professeur d' Opérations et Appareil à la Faculté de Médecine de Paris. Translated by ERNEST WARD, M.A., M.D., F.R.C.S. With 510 illustrations. New York: William Wood & Company. 1917.

A small volume of about 300 pages presenting what Prof. Broca considers still essential in teaching the technique of literature of arteries and amputation of limbs.

Mr. Ward mentions the fact that he has "simply translated the book as it is written, without any editing or footnotes."

While Prof. Broca in his preface acknowledges his very great indebtedness to Farabeuf, saying that he does not consider the present small volume an original work and suggesting that it is really his own abridgment, with, perhaps, modifications from his own experience of Farabeuf's teachings, he writes that he believes, while classical amputations may have been over-taught years ago, that some of the essential principles are now actually forgotten; and that today there are proportionately more poor stumps than there were years ago. Most of the drawings, which are excellent in simplicity and distinctness, are taken from Farabeuf.

In these days, in which we hear so much of the general question of amputation in relation to war surgery, a small manual of this sort is of distinct interest and value, particularly as it comes to us from France and contains information gathered by Broca in his experience in the present war.

Gynecology.—The Practical Medicine Series—1917. Edited by EMILIUS C. DUDLEY, A.M., M. D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago, and SYDNEY S. SCHOCHET, M.D., Instructor in Gynecology, Northwestern University Medical School; Adjunct Gynecologist, Wesley Hospital, Chicago. Chicago: The Year Book Publishers. 1917.

This useful little abstract of gynecological literature appears in its usual form. Naturally, there is even greater lack of foreign literature than a year ago. The sub-title is somewhat misleading—"comprising . . . volumes on the year's progress." There is much in each year's product that does not represent progress in gynecology. It may indicate progress on the part of the author, showing that he is in the way of learning something; but that is all. Thus, in addition to literature that shows progress, there are abstracted articles which might better be catalogued by title alone. However, as the method adopted in this volume indicates also what not to read, it renders a valuable service.

Handbook of Gynecology, for students and practitioners. By Henry Foster Lewis, A.B., M.D., Professor and Head of Department of Obstetrics and Gynecology in Loyola University School of Medicine; Chief of Obstetric Staff of Cook County Hospital; Fellow and ex-President of the Chicago Gynecological Society; late asssistant Professor of Obstetrics and Gynecology in Rush Medical College (in affiliation with the University of Chicago) and Alfred de Roulet, B.Sc., M.S., M.D., Professor of Gynecology in Loyola University School of Medicine; Attending Gynecologist to the House of the Good Shepherd, and to St. Bernard's Hospital; Obstetrician and Chief of Staff of St. Margaret's Home and Hospital. With 117 illustrations. St. Louis: C. V. Mosby Company. 1917.

A new book is always looked into with interest. Does it contain new ideas? Perhaps this is too much to expect of a textbook, a "handbook" as this is called. Doubtless the size of a handbook depends on the size of the hand: Veit's Handbuch is in seven volumes. This book by Lewis and deRoulet is designed chiefly for the medical student, not for the specialist, and, regarding gynecology from the point of view of the student as a minor subject, consists of one small volume.

The classification follows "the lines of pathology as much as present knowledge will permit." By this is meant that lesions of one apparent kind are treated under one heading: for example, all cysts of the genital system are discussed in one chapter. This classification has only a certain informational advantage and takes away emphasis from a more important point of view.

Even in a new book it is difficult to escape from the past, and occasional bonds are visible. The chapters on Asepsis in Gynecology, Care of Patients before and after Operation, and Anesthesia might well be omitted, not because they are unimportant, but because the student should receive formal instruction in asepsis; for example, once for all in the course in surgical technic, and in anesthesia in its appropriate place, which is not in the specialty of gynecology.

Too much emphasis is laid on the view which regards prolapse of the uterus as a hernia. The analogy is not as exact as the authors would have the student believe. It is helpful to consider the likeness to a hernia, but more helpful to consider the unlikeness. Part of the cervix of the uterus is actually a part of the pelvic floor.

The book, however, aims to "supply the knowledge of principles." This it does, for the most part clearly and succinctly and with excellent judgment. The illustrations are clear and the selection good.

The Principles of Gynecology, for students and Practitioners of Medicine. By W. Blair Bell, B.S., M.D., Lond., Gynecological Surgeon, Royal Infirmary, Liverpool; Lecturer and Examiner in Clinical Gynecology in the University of Liverpool. Second edition. New York: William Wood & Company. 1917.

This second edition contains few changes from the first of seven years ago, chiefly because of the difficulty experienced by the author in finding time in this period of stress for a thorough revision.

The arrangement of the subject-matter is unusual though not new with this work. For example, malformations of the whole genital system are considered in one chapter, injuries of all parts of the system in another, infective and parasitic diseases in a third, benign neoplasms in a fourth, and so on. This method is characterized as the most "scientific." But at present no method of classification is best adapted for all conditions. "Scientific" should mean, based on the principle of cause and effect. Thus all forms of infection of the genital system caused by the gonococcus might well be considered in one chapter. But no especial illumination is thrown on malignant growths by presenting cancer of the vulva, of the cervix and of the ovary consecutively. That is, in the present state of our knowledge, a scientific classification of tumors is not possible; and it is a convenience, from the clinical point of view, in the presence of some obvious pathological condition of the cervix, for example, to consider the various possible diseases of the cervix which this particular condition may be.

The vigorous style of the author is characteristic, and the fundamental principles of gynecological science and practice are stated concisely and clearly.

Diseases of Women. By Harry Sturgeon Crossen, M.D., F.A.C.S., Associate in Gynecology, Washington University Medical School, and Associate Gynecologist to the Barnes Hospital; Gynecologist to St. Luke's Hospital, Missouri Baptist Sanitarium and St. Louis Mullanphy Hospital. Fourth edition, revised and enlarged, with eight hundred engravings. St. Louis: C. V. Mosby Company. 1917.

This deservedly popular book now appears in its fourth edition. The changes are not numerous nor are they radical, but they are in the way of improvement. A few microphotographs have been included and a new chapter has been added on the endocrin glands. There is still, however, too much space devoted to operations for a work of its avowed limited scope. The press work shows a distinct improvement and will increase its already well recognized usefulness.

Surgical Contributions. From 1881-1916. By Rutherford Morison, M.B., F.R.C.S., Edin., F. R. C. S., England. Consulting Surgeon Royal Victoria Infirmary, Newcastle-on-Tyne; Professor of Surgery, Durham University; Examiner in Surgery, Liverpool University. Volume I, General Surgery; Volume II, Abdominal Surgery. New York: William Wood & Company. 1916.

These two volumes are not described as "textbooks," and yet, considered as examples of surgical practice, and as frank commentaries and criticisms of surgical procedures, they may well be considered textbooks of modern surgeons. Mr. Morison has been most frank in relating his own mistakes, and is equally determined in maintaining his own opinions. He in reality presents a history of surgery since 1881, as developed in the best English school. He begins with the Lister dressing and the carbolic spray, which he learned from Sir Joseph himself; and even in 1916 he is evidently still a believer in antisepsis.

These two books contain case histories, lectures, discussions, observations, suggestions and end results in really enormous numbers; everywhere is brevity, directness and simplicity. As might be expected, he describes many unusual cases: enormous calculi, one weighing one pound and six ounces; another, quarter of a pound; enormous tumors, splenectomies, gastrectomies and hysterectomies, when these operations were rare. Consideration of his fatal cases is given more than once; and parallel to his original papers are comments made by him now in 1916, with the same frankness that his early writings possess.

The so-called Talma-Morison operation he devised, executed and reported years before he had heard of Prof. Talma's proceedings; his technic differs somewhat from that usually followed in the United States.

The reviewer warmly recommends the volumes to the surgeons of America. In every way, they repay the attentive reader.

Three Clinical Studies in Tuberculous Predisposition. By W. C. Rivers, M.C.R.S., D.P.H. London: George Allen and Unwin, Limited.

This book consists of 272 pages, with numerous illustrations and an elaborate protocol, giving the details of 500 cases, by which the author endeavors to show that ichthyosis, squint and nasal abnormalities are predisposing factors toward the development of tuberculosis.

Concerning the first of these conditions, ichthyosis, he believes that the "incidence of ichthyosis may entail liability to consumption," and that "ichthyosis may be regarded as a sign of predisposition to consumption."

In regard to squint, he states that "squint probably merely indicates in certain instances the presence of predisposition to tubercle—clinical pulmonary tubercle—without itself forming an active constituent of a phthisical diathesis. Such active constituent may be some associated malformation, of which squint is the stigma."

The greater part of the book is devoted to a consideration of the relationship of consumption to nasal abnormality. From a study of the literature bearing on this subject, he concludes that, "every writer, save one, either maintaining or being impressed with the likelihood that non-tuberculous, intranasal abnormality is a fairly common predisposing cause of tuberculosis." In discussing this subject he calls attention to the apical collapse induration, which is well known to be associated with certain nasal abnormalities.

The writer's general argument, *i.e.*, that any disease which tends to reduce the resistance and the nutritive processes of the human body, and any disease which tends to interfere with the respiratory processes, may be a predisposing factor in consumption, is a perfectly sound one. Any one, however, might with just as good reason as the present writer, select three entirely separate conditions and make a careful study of the cases of tuberculosis which occur coincident with such conditions, and come to the same clinically sound conclusions as does the author of this book. The reviewer, therefore, while admiring the careful study of the literature, and the painstaking detail with which the author has taken up the subject of ichthyosis, squint and nasal abnormality as related to tuberculosis, is quite unwilling to believe that any one of these conditions renders the person more prone to tuberculosis than innumerable others that might be mentioned.

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WAR NEPHRITIS.

The *British Medical Journal* has drawn attention to a certain lack of probability in the view that war nephritis is a new form of kidney disease, or even a modified form of disease previously known. The whole question of causation is, indeed, difficult; and not a few experienced observers are coming to the view that war conditions have simply obscured the pathology of nephritis without adding a positively new element. What these controlling conditions are is not fully established, but it is evident that they are closely associated with the conditions which produce a high blood pressure and a cardio-respiratory complex, with inadequate or inferior food, with excess of protein in the diet, with the occupations of soldiers in the trenches, and with the general circumstances of exposure, overcrowding in billets, and fatigue, or *surmenage,* as the French call it. In fact, the French physicians, for example, Boulangier in the *Paris Médicale* lately, find the etiology in this general state of affairs, which must be borne in mind as always lying in the background, before we seize exclusively upon some unknown micro-organism as the beginning and end of the problem. They seem content with this natural explanation, and define war nephritis as only a manifestation of congestion *a frigore.*

In connection with the theory of a toxic or microbic origin, it is significant that animal experiments—the inoculation of guinea pigs with carefully drawn specimens of urine—have proved negative. An ultramicroscopic organism might disclose itself in this way. On the other hand, such an organism would probably produce characteristic lesions in the kidney. The most recent knowledge on this point, in the paper of Captain J. Shaw Dunn and Colonel J. W. McNee, in the *British Medical Journal* of December 8, 1917, certainly renders this view highly probable. Their plates show that in soldiers who have died in the acute stages of war nephritis, the lesions in the kidney are limited to the capillary blood vessels of the glomeruli. These lesions have many appearances of novelty, and, so far as they may be judged in this way, are evidences of the invasion of the kidney by bacteria or their toxins.

One difficulty in accepting this view has not been noted. It does not account for the incidence of the disease. Dunn and McNee observed most of the cases in the infantry; cavalrymen and artillery men are affected less often, while officers seldom have war nephritis. They note, also, that the disease does not occur in the same ratio in the civilian population of the same area. How are these facts to be reconciled with the germ theory? It seems to be still further weakened by the statement that war nephritis is not due to exposure to variations of temperature. Season and climate, it is said, exert no appreciable influence. This idea is evidently wholly at variance with the view of French and Italian observers, that the principal factors are environmental. If this type of nephritis is really due to infection, it would seem more natural to believe that cold and bacteria were jointly responsible.

Whatever may be the cause, the problem of war nephritis has some extraordinary ramifications which suggest infection. It begins suddenly with dyspnea, and the pulse and temperature curve recall pneumonia. In fact, the diagnosis of pneumonia has been made erroneously in cases that turned out to be war nephritis. Moreover, there is some relation between it and youth. It appears to attack young soldiers especially. It is curious that older men with some arterial changes, and even a history of renal disease, occupy a relatively favorable position. These facts, if fully established, indicate a relation between war nephritis and orthostatic albuminuria, and in both recovery and disappearance of albumin follow rest and proper diet.

Lastly, the respiratory symptoms naturally suggested, besides infection, poisoning by asphyxiating and other gases. The fact that the peculiar disabilities of trench nephritis are more widely distributed through the infantry and the rank and file, seems to lend an air of great probability to this supposition. But there is another side to the toxic theory which has not been noticed. One of its features, which has not received sufficient attention, is the effects of a series of vaccinations. Bacteriologists are alive to the possibilities of anaphylaxis, and it is not too much to say that war nephritis may be a manifestation of this kind. A Russian pathologist, Stefanski (*Russki Wratsch,* 1917, p. 89), has adduced a number of instances of albuminuria after antityphoid and antistreptococcic inoculations. The whole question cannot be discussed here, but it is reasonable to suppose that the frequency and variety of modern vaccination among troops might subject the kidneys and the circulation to a considerable strain. There is nothing surprising to the bacteriologists and worker in animal inoculation in this aspect of the case. The results of animal experiments show that, if an injection of antityphoid, anti-cholera, or anti-dysenteric vaccine is repeated after a short interval, the phenomena of anaphylaxis appear. It may be inferred, according to Kraus and Doerr, that the kidneys in man will react in the same manner, though not, perhaps, in the same degree. We do not suggest that a substantial proportion of cases of war nephritis are due to vaccination, but the question of its origin cannot be answered relevantly without an examination of all the facts.

* * *

REPORTS OF HOSPITALS FOR THE INSANE.

LOOKING over a number of reports of state hospitals for the insane, the mind is bewildered by the immense variety of these documents. Here we have a report which sounds like the business statement of a modern farm; there we have a collection of psychological documents; and in another place we feel as if we were having a chat with a gentleman showing us over his establishment. One report will give the number of manic-depressives admitted during the year as sixty per cent., another will give fifteen per cent., and still another two per cent. Many other discrepancies might be pointed out, but these are sufficient for exemplification. For the earnest student of psycho-pathology such a state of affairs is puzzling and exasperating; the modern superintendent of an insane hospital, who wishes to obtain a broad view of the condition of the insane in the various other hospitals in other states, is baffled.

There is a reason and a remedy. The reason is, that state hospitals for the insane are dependent upon an annual appropriation, whose disbursement is scrutinized closely, and the superintendent is expected to eke out his finances by developing to the utmost his natural resources; every acre of land must be farmed or made into pasture. It is of more moment to the board of directors that enough meat was raised during the year than that the recovery rate of dementia precox is falling. The hospital superintendent must be a good executive and business man first, then a good psychiatrist if he has time. Nor can the obvious remedy be applied—to put the administrative affairs of the hospital under one head, and the medical under another. Wherever such a scheme has been tried it has come to grief.

What, then, is the remedy? We want, first of all, a medical head for such a hospital who has the ultimate disposal of all administrative affairs. Under him should be two distinct branches, the administrative and the medical. The former, divided into many parts, should be under the head of a good business man, whose duty it is to develop the resources of the hospital to the utmost, but never at the cost of injury to the patients' welfare, and always subject to the approval of the medical superintendent.

Each hospital should be required to publish two distinct reports, one by the steward and the other by the medical staff. The medical report should be really illuminating. It should give information about the admissions of the year, comparing them with previous years. It should abstract the original work done during the year by the members of the staff; it might even publish one paper by each member, if the staff is not too large. Cases should be classified according to a uniform standard, say the one adopted by the American Medico-Psychological Association. Any rare neurological or psychiatric cases observed during the year should be noted, so that a psychiatrist studying a particular subject would know where to apply for records of apposite cases.

In short, the annual report of the modern hospital for the insane should be a real aid to the study of psychiatry. It should report the progress made by that hospital during the year; and the student of psychiatry, having before him the annual reports from all the states, would then be able to get a bird's eye view of the year's progress in caring for the mentally ill; he would be able to realize, with some accuracy, whether such a disease as dementia precox is really on the increase or not, and not be confused by administrative data of economic importance rather than psychiatric relevancy.

THE VENEREAL DISEASE PROGRAM IN MASSACHUSETTS.

IN another column of this issue of the JOURNAL is published the fourth and last of a series of special articles on the venereal disease program in Massachusetts. The first of these, on "Venereal Disease Reporting," by Dr. Eugene R. Kelley, chief of the Division of Communicable Diseases of the State Department of Health, was published in the JOURNAL on January 17 and received editorial comment in the same issue. The second, published in the issue of January 31, was by Dr. Merrill E. Champion, and dealt with the aspect of the problem involved in measures for the extension of facilities for diagnosis and early treatment; and the third, by Dr. Kelley, published on February 7, dealt with repressive measures. The present and concluding instalment, by Dr. Lyman A. Jones, director of the Division of Hygiene of the State Department of Health, is concerned with the educational aspects of the subject.

Much has recently been written concerning the problem of venereal diseases among armies in camp and in the field; but in the last analysis the solution, or rather abolition, of this problem, rests upon the more fundamental one of conditions existing in the civil community. As in the case of alcoholism, it is primarily through the medium of widely diffused popular education that evils of this sort can most effectively be reached and combated.

In connection with Dr. Jones's contribution and the second paper by Dr. Kelley, attention may be drawn to a bill (House No. 213) accompanying the recommendations of the State Department of Health, now pending before the Massachusetts General Court. This act, relative to the sale and distribution of certain drugs, is aimed primarily at the surreptitious drug-store treatment of venereal diseases, and may be regarded as an attempt to secure for the public the most effective possible treatment for this group of ailments. The text of the bill is as follows:

"Section 1. It shall be unlawful for any person, firm, or corporation to sell, furnish, give away or deliver any drugs, medicines or other substances to be used for the cure or alleviation of gonorrhea, syphilis, or other venereal disease, except upon the written order of a manufacturer or jobber in drugs, wholesale druggist, registered pharmacist actively engaged in business as such, physician registered under the laws of this Commonwealth, or an incorporated hospital through its superintendent or official in immediate charge, or upon the written prescription of a physician registered under the laws of this Commonwealth, bearing his legal signature and his office address.

The prescription when filled shall show the date of filling and the legal signature of the person filling it, written across the face of the prescription, and shall be retained on file by the druggist filling it for a period of at least two years. No order or prescrption shall be received for filling or filled more than fourteen days after its date of isssue, as indicated thereon.

The prescription shall not again be filled, nor shall a copy of the same be made except for the purpose of record by the pharmacist filling the same, and it shall at all times be open to inspection by the officers of the state department of health, the board of registration in pharmacy, the board of registration in medicine, and the authorized agents of said department and boards.

Section 2. Any person who for the purpose of evading or assisting in the evasion of any provision of the act shall falsely represent that he is a manufacturer or a jobber in drugs, wholesale druggist, registered pharmacist or registered physician or superintendent or other official immediately in charge of any incorporated hospital, or who, not being a registered physician, makes or alters a prescription or written order for any drug, medicines or other substances to be used for the cure or alleviation of gonorrhea or syphilis or other venereal diseases, or knowingly issues or utters a prescription or written order falsely made or altered, shall be deemed guilty of violation of this act."

Section 3 provides that any violation of this act shall be punishable by a fine of not less than $5.00 for a first offense, not less than $100 for a second offense, and by fine and imprisonment for not less than thirty nor more than ninety days for any subsequent offense.

The passage of this commendable act is earnestly to be desired and advocated by the medical profession.

MEDICAL NOTES.

Meningitis in South Carolina.—In an effort to check the epidemic of spinal meningitis in Columbia, S. C., the health department has ordered the closing of public schools, churches, motion picture theatres, and other public gathering places. Sixteen cases of the disease have been reported.

Health of Belfast.—Among the Irish notes in the *British Medical Journal,* recently appeared the following item with reference to the public health of the city of Belfast:

"At a meeting of the Belfast city council, held on January 2, it was reported that during 1917 there were registered 6541 deaths, as compared with 6496 in the preceding year. The death rate, calculated (apparently) upon a population of 394,000, was 16.6 per 1000, which is the lowest on record, the figure for 1916 being 16.7. The zymotic death rate was 1.1 (414 deaths), and was also the lowest on record, the rate being 1.7 (650 deaths) in 1916. The disappointing features of the health of Belfast last year were: (1) that the deaths from typhoid fever (though they only totalled 41 out of 277 notifications) are more numerous than they have been since 1908; (2) that the infantile mortality rate has risen to 128 per 1000 births, as compared with 113 in the previous year; and (3), worst of all, the high tuberculosis mortality rate. There were 929 deaths from pulmonary tuberculosis, giving a rate of 2.4, while, in 1916, the deaths were 830, with a rate of 2.1. This means that 99 more people died of pulmonary tuberculosis in 1917 than in 1916, and since 1906 it is the highest number recorded. If the explanation given, *i.e.,* that this high Belfast pulmonary tuberculosis rate is due to the number of soldiers who, on being discharged from the army, came home to die of consumption, be true, it conveys a grave impeachment of the efficiency of medical examination for the army, and it is really hard to believe that almost a hundred discharged soldiers should have actually died of pulmonary tuberculosis in 1917 in Belfast. During the last two years the Belfast Corporation have expended something like £70,000 in working a tuberculosis scheme, with the result, as a member of the City Corporation pointed out at the meeting on January 2, that there is a largely increased tuberculosis death rate. Apparently, tuberculosis is not to be got rid of as easily as was thought, at least, by domiciliary and sanatorium treatment."

American Cooked Food Service.—That new social conditions are arising out of the food and labor situation, is shown by the response of the public to the new food service plan being established to deliver cooked meals to homes.

The demand for this service comes from the better class of apartment houses and separate homes on the upper West Side (New York City), within motor radius of the first station at 213 West 79th street, but the founders are making every endeavor to place the low-priced service within the the reach of the industrial population.

The men and women who have interested themselves in the American Cooked Food Service are more than gratified by its results. Included on the Board of Directors are Miss Jessie H. Bancroft, president; Mr. Adolf Lewisohn, vice-president; Dr. Belle J. Macdonald, treasurer; Mrs. William G. Shailer, secretary; Mrs. Herbert L. Satterlee, Mrs. Egerton L. Winthrop, Jr.

The demand for this service has been such that two weeks before its opening day (February 1) the first station was registered almost to its full capacity of 500 persons per day.

Other stations are in contemplation, so that all parts of the city may have hot, well-balanced meals, fulfilling all the requirements of the Food Dictator and endorsed by him, delivered to the homes.

PREVENTION OF VENEREAL DISEASE IN NEW YORK.—The Department of Health, in its efforts to control the spread of venereal disease, sends out the following notice:

Despite frequent explanation of the Health Department's attitude with respect to venereal diseases, a large number of physicians still misrepresent the work of the venereal clinics, and voice their antagonism to what they allege is the Department's unwarranted treatment of venereally infected individuals who are well able to pay for treatment.

Let us therefore repeat, the so-called "venereal clinics" conducted by the Department of Health *do not treat* patients. In response to announcements posted by the Department of Health in the toilets of saloons, ferry houses, and railway stations, persons having venereal disease come to the Department's clinics for confidential advice. They meet the "medical adviser," who goes into the history of the case, examines the patient, takes blood specimens for serum test and smears for microscopical examination, explains the nature of the disease, its mode of spread, and the necessity for prompt and proper treatment by a competent physician. The patient is warned against self-medication, treatment by druggists and by advertising "specialists." He is told to consult and trust his private physician, or, if obviously unable to pay a private physician, he is referred to one of the recognized dispensaries for treatment.

Under no circumstances is the patient treated by the medical adviser, and every effort is made to have the patient place himself under the care of his family physician. In accordance with the law, every patient applying at the clinic receives a pamphlet of instructions regarding the nature of venereal disease, mode of transmission, precautions to be taken, necessity of prompt and adequate treatment, importance of laboratory tests in determining infection, and cure, etc.

DIAGNOSTIC FACILITIES AT THE DISPOSAL OF PHYSICIANS.—Physicians are urged to make greater use of the diagnostic service offered to them by the Department of Health of New York City. These include serum tests for the Wassermann reaction in syphilis, complement-fixation tests for gonococcus infection and the microscopical examination of pus and other discharges. In order to assist in the diagnosis of doubtful cases, the Division of Venereal Diseases is prepared to make and examine by dark field illumination, microscopical smear preparations from cases of suspected syphilis. Physicians who choose to refer patients who are unable to pay fees of private laboratories, should furnish them with a letter explaining the nature of the service desired and direct the patients to "The Medical Adviser," Room 207, 139 Centre Street, Manhattan, hours from 9 to 11.30 a. m. daily. A prompt report of the adviser's findings will be sent to the attending physician referring the patient.

COÖPERATION WITH AMERICAN PUBLIC HEALTH ASSOCIATION.—At the recent meeting of the Association of Life Insurance Presidents, held in New York City, the following resolutions were adopted:

Whereas, The improvement in public sanitation through the efforts of local health boards is one of the most important and valuable results achieved in the field of preventive medicine; and the life insurance companies should be and are peculiarly interested in the progress and success of all movements which tend to prolong the term of human life; and

Whereas, The American Public Health Association is engaged in the work of promoting the enactment and enforcement of more scientific and effective health laws, and of giving expert advice upon methods of health board organization and health law administration; now therefore be it

Resolved, That the life insurance companies of the United States are earnestly recommended to become members of the American Public Health Association, and that their representatives be encouraged to give personal aid to all efforts intended to improve local sanitary conditions.

CAMPAIGN FOR NEW MEMBERS OF TUBERCULOSIS ASSOCIATION.—"The Executive Committee of the National Tuberculosis Association has announced a campaign for 5000 new members. This drive was launched on February 4, 1918, and will continue until March 11.

The reasons that have influenced the National Association to start the campaign at this time may be briefly summarized as follows:

First. The membership of the National Association at the present time is only about

2500. If the Association is going to be of the greatest usefulness in promoting interstate and federal programs for the control of tuberculosis and in assisting local and state organizations in their work, it must have a wider representation and more money.

Second. Demands upon the National Association for field and other special lines of service at the present time are so overwhelming that they cannot possibly be met unless its budget is increased from 50 to 100 per cent.

Third. The special demands upon the National Association because of the war have greatly increased the necessity for expansion of its scope of work. If these opportunities are to be realized, the most assured way of financing the work should seem to be by an increased membership.

Fourth. The rapidly developing anti-tuberculosis movement has enlisted a large and increasing number of men and women in every part of the United States. The National Association believes that from this group it will be a comparatively easy matter to recruit at least 500 members. It is the hope of the Executive Committee that the membership of the National Association will soon reach at least 10,000.''

WAR NOTES.

An Exhibit for the Soldier.—''The National Association for the Study and Prevention of Tuberculosis is preparing an exhibit on the general subject, 'The Health of the Soldier,' for use in the military camps in the United States and France. The exhibit will be shown in co-operation with the Educational Bureau of the War Work Council of the Y. M. C. A. in all the Association buildings. At least twenty different sets will be prepared.

The exhibit will be in fifteen panels of three sets of five, and will aim to stress the positive side of health. The first series of five panels will be headed 'Diseases are spread by close contact,' and will take up coughs and colds, measles, pneumonia, tuberculosis and syphilis. The second set will be headed, 'Diseases are prevented by knowledge and care,' and will portray how by covering the mouth in coughing and sneezing and by care in spitting, many diseases can be prevented. The third series will be headed, 'Fitness for Fighting,' and will emphasize the need for fitness and the patriotic aspects of being fit to fight.

James Daugherty, a well-known artist, has been engaged to draw the color illustrations for the panels. These panels will be two-thirds illustration, and will portray as accurately as possible some interesting phases of army life.

In conjunction with the exhibit the National Association will also issue a series of stock lectures on tuberculosis and health, and a special circular for popular distribution in the camps, entitled, 'Red Blood.' ''

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending Feb. 2, 1918, the number of deaths reported was 262, against 307 last year, with a rate of 17.42, against 26.73 last year. There were 32 deaths under one year of age, against 43 last year.

The number of cases of principal reportable diseases were: diphtheria, 98; scarlet fever, 52; measles, 115; whooping cough, 22; typhoid fever, 2; tuberculosis, 73.

Included in the above were the following cases of non-residents: diphtheria, 9; scarlet fever, 6; measles, 2; tuberculosis, 5.

Total deaths from these diseases were: diphtheria, 10; measles, 2; tuberculosis, 27.

Included in the above were the following non-residents: diphtheria, 3; tuberculosis, 1.

The Massachusetts Homeopathic Hospital.—The annual report of the Massachusetts Homeopathic Hospital for the year ended December 31, 1916, records an ever-increasing number of patients who yearly visit this institution for medical treatment. The main hospital cared for 8305 patients, the John C. Haynes Memorial for 1346, the Sunny Bank Home for 186, Nash House for 86 and the Out-Patient Department for 14,443 patients. New ambulances have been purchased for both the main hospital and the contagious department, and an improved x-ray machine purchased and installed at the main hospital. The training school graduated 36 pupils and accepted 64. A new clinic for venereal diseases has been opened.

Hospital Bequest.—By the will of the late Mary Jewett Bishop of Cambridge, Mass., the Cambridge Hospital receives a bequest of $10,000 and the Cambridge Anti-Tuberculosis Association receives $2000.

Commonwealth Military Emergency Hospital.—At the formal opening of the Commonwealth Military Emergency Hospital, attended by the Lieutenant-Governor, the Massachusetts Public Safety Council and Army and Navy officers, an interesting demonstration was given of the manner in which the hospital can be operated to meet the demands of an emergency.

"Lieutenant Colonel William A. Brooks, chief surgeon of the State, who conceived the idea of the hospital, had general supervision of the demonstration. A major from each regiment of the State Guard and several nurses, in charge of Miss Elizabeth Beden, attended to the reception of the 'patients' in the different wards. One-half of the Ambulance Company, under Captain Cunningham, had been called out and looked after the ambulances, of which twelve were used. Two quartermasters, Captains Hyde and Lapham, from the State Guard, also were on duty.

One of the wards was made up with beds complete, simply to show what the wards will look like when in apple-pie order, so to speak. The other wards that were used had to be gotten ready the same as for an emergency. Mattresses were rushed in ambulances from the storage rooms and were put on the bedsteads, then the sheets were put on and the beds 'made up.' It will be impracticable to keep the beds ready all the time, owing to the dampness due to condensation under the glass roof.

The ambulances were driven in from the rear entrance to the hall and carried their patients direct to the wards, where they were unloaded (perfectly healthy men representing the patients in this instance) and after an examination were taken to the operating room. Everything was carried out as if the patients had been real sufferers from injuries in an explosion, a fire or some other disaster, and the speed with which the victims were handled elicited praise from the spectators."

The Massachusetts Medical Society.

District Correspondents.

Berkshire, A. P. Merrill, M.D., Pittsfield.
Bristol North, Arthur R. Crandell, M.D., Taunton.
Bristol South, Edwin D. Gardner, M.D., New Bedford.
Essex North, T. N. Stone, M.D., Haverhill.
Essex South, H. P. Bennett, M.D., Lynn.
Hampden, Laurence D. Chapin, M.D., Springfield.
Hampshire, E. E. Thomas, M.D., Northampton.
Middlesex South, William C. Hanson, M.D., Belmont.
Norfolk South, Daniel B. Reardon, M.D., Quincy.

NOTES FROM THE DISTRICT SOCIETIES.

Franklin District Medical Society.—The following is a copy of a note suggested to be sent from secretaries of District Medical Societies to members who have entered the federal service.

Dear Doctor: You have answered a call to patriotic service, have enlisted under the government for military and humanitarian duties and are preparing for or fulfilling the various commissions for which experience, training, and natural capacities fit you. You were our professional neighbor in this hilly rural section, where the aged are as plentiful as the youth. The vigorous youth of a great country have been mobilized to stay the ravages of a social, a political, a national disease that threatens democracy,—homes, hopes, nations, the stability of institutions,—for life and strength and character of such are dependent upon the healthy interplay, and respect for the constructive service of the individual and the coöperative worker. Such assemblage of virile young men as surround you must be impressive and stimulating. You minister to their physical and mental health. You have also the privilege of moral and spiritual leadership. With all the liabilities incident to army life, the stress, the strangeness, you have a power for influencing the individual, much to be coveted; you have a part in the weaving of a quality of human fabric that protects its own life and interests, and those dependent upon it, from the organization of another human fabric representing a nation which has been greedily assuming a power and influence out of accord with the ideals of the times, progress and true brotherhood. Would to God there were a way of staying the perils, the frightfulness, the destruction of life and limb from the device, the momentum, the enginery—the fruit of conceptions of national lust—in some other way than by all this sacrifice. Our society voted at its last meeting to look after your membership dues while you are in the service and of course will be pleased to hear from you in any way. To keep intelligently in touch with you will be a privilege for us and we hope a help and service to you, and as secretary for the unexpired term, I desire to convey in part expressed wishes of our members.

Paul W. Goldsbury, *Treas.*

Miscellany.

THE MASSACHUSETTS VENEREAL DISEASE PROGRAM.

(PART IV.)

By Lyman Asa Jones, M.D.,

Director, Division of Hygiene, State Department of Health.

(*Continued from page 209.*)

Venereal disease reporting, measures to provide increased facilities for diagnosis and treatment, and repressive measures, phases of the Department's program already discussed in these columns, look toward the more immediate control of, and prevention of venereal disease.

Educational measures, the final phase of the Department's program, though of value in the work to be immediately undertaken, look rather to the future. They constitute not the least important part of the program, since the success of all other measures will be greatly increased by the active support of public opinion, and public opinion will not be well directed unless it is intelligent, founded upon knowledge of the facts.

The plans worked out for the reporting of the disease are in themselves educational, and provide especially for the instruction of the patient suffering with gonorrhea or syphilis, since each physician is required to give the patient a circular explaining what the disease is, what its consequences are, explaining the importance of proper treatment and giving necessary detailed directions for preventing the further spread of the disease.

The proposed clinics, scattered throughout the state, for which arrangements are already well advanced, will also serve as educational centers, where information may be secured and where approved forms of treatment may be demonstrated. The clinics will also serve as agencies through which arsphenamine, the Department's substitute for salvarsan, will be distributed.

Small framed placards, giving information concerning venereal diseases and indicating clinics where advice and treatment may be obtained are in preparation. It is the intention that such placards shall be posted in public toilets or other suitable places in the vicinity of the clinics just mentioned.

For general distribution, the Department has prepared a small pamphlet, setting forth plainly and with authority, what the venereal diseases are, their importance as a public health problem, their consequences and how they may be avoided. Copies of this pamphlet may be had upon request.

Knowledge of this subject may also be spread in the community through lectures before suitable audiences. For the benefit of the public it is not necessary that such lectures go into details in many instances, but statements as to what these diseases are, what their dangers and consequences, may properly become matters of common knowledge. The department is prepared to supply to a limited extent, lectures in which this topic will be considered.

As a part of their regular work, local boards of health may properly engage in health educational work. Each board of health should be prepared to furnish correct information about health matters or to direct those who inquire to trustworthy sources of information or advice. This includes information regarding venereal diseases.

Work of this character could well be provided through a physician to the board of health, whose appointment in cities is authorized under the present law.

Educational measures for the prevention of venereal diseases should include also the instruction of college and normal students as to the relation of these diseases to public health, and the dangers which they threaten to community health.

It will mean much for the campaign against these diseases when the opinion of the community will permit, in newspaper or magazine, a proper consideration of these venereal diseases, not in a morbid or prurient manner, but merely on the same plane as the discussion of fire dangers, accidents in industry, or any other serious problem which threatens the public welfare, which, after all, is nothing but the welfare of each individual constituting the public.

THE BRITISH MARRIAGE RATE AND THE WAR.

The London *Lancet* for November 24, 1917, contains the following interesting account of the rise and fall of the marriage rate in the United Kingdom during war times.

"The Presidential address of Sir Bernard Mallet, the Registrar-General of Births, Deaths, and Marriages, delivered on Tuesday last at the Royal Statistical Society, dealt in a valuable manner, because of his clearness, with those large questions of racial advance or decline which may dictate the fate of the world at the close of a devastating war. On the subject of the marriage-rate of this country he was particularly interesting. For England, Scotland, and Wales he indicated that a fortunate rise in marriage-rates has taken place, though this rise appears to have been in continuation of one which had already become apparent before the war broke out. The marriage-rates were not, as a matter of fact, increased at first by the outbreak of war, but at the beginning of 1916 occurred a sudden rise, due to marriages contracted by young soldiers in an army which was rapidly nearing its present immense size. The rise was not continued throughout the year, but has had its effect. Sir Bernard Mallet's summary of the actual figures shows that 200,000 people in England and Wales have been married between August, 1914, and June, 1917, who in the ordinary course of events would not have been married; the corresponding figure for Scotland he puts at 8000, while in Ireland the number of marriages has remained fairly constant, not appearing to be materially greater than the normal in the period from August, 1914, to June, 1917. These British figures Sir Bernard Mallet finds to be in complete contrast with those prevailing in Germany, and for the contrast he gives two reasons. The first is that an enormous German Army, being thoroughly prepared, rushed on to foreign soil at the outbreak of war, while the bulk of the British Army remained for some time under training at home, so that the men enjoyed opportunities for marriage that were largely denied to the German Army. The rise in our marriage-rates being practically dependent upon the size of the Army, the second reason for its occurrence has been the payment of substantial separation allowances and pensions. The effect which has already been produced by the war marriages, or rather by the abnormal number of marriages which took place in the year ending March, 1916, has had a real influence, at any rate for the time, in arresting the decline of births, which has been a feature in the statistical records of all civilized countries for some years. It is of good omen to learn that this decline has not affected the United Kingdom to anything like the extent to which it has affected Germany and Hungary."

A NEW HIPPOCRATIC MANUSCRIPT.

In the issue of the *British Medical Journal* for November 17, 1917, is noted as follows the description of some recently discovered fragments in Greek of works belonging to those attributed to Hippocrates:

"Of two classical works attributed to celebrated medical authors, probably neither was really written by the assigned author. These are the *περὶ έβδομάδων* of the pseudo-Hippocrates and the pseudo-Galen's commentary upon the first seventeen chapters thereof extant in an Arabic version. The Hippocratic treatise is of far the higher importance because of its extreme antiquity, it having been alluded to by Plato and numerous authors down to recent times, while the information which it affords of ancient pathological theories is useful. There is a Greek Codex of the work in the Bibliothèque Nationale; also a Latin version there and in the Ambrosian Library. Our reference to the Hebdomad is prompted by the fact that some fragments of the Greek recension were discovered recently, and these have been studied and assigned to the proper places in the Paris Greek text by Dr. von W. H. Roscher, of the University of Athens. Unfortunately, his book, 'Die Hippokratische Schrift von der Siebenzahl' is published at Paderborn, and so not at present available for scholars here. It is a curious thing that among 110 palimpsests, found in various libraries during the last century, from which some valuable portions of classical literature have been recovered, only one containing eight pages of the 'Mulomedicina' of Vegetius, which is in the St. Gall library, is of a medical character. Probably medical works were too useful for their parchments to be sold to the scribes to be cleaned and used over again for theological polemics, and sermons of the early fathers."

ORTHOPEDIC SURGERY IN WAR.

On January 2, 1918, Dr. Sir Robert Jones delivered before the Hunterian Society of London an address on "Orthopedic Surgery in War Time," of which the following brief summary from the *British Medical Journal* will serve to give an idea of the substance. Interest in this address is augmented by the large part which American orthopedic surgery is taking and is to take in the development of this new surgical department in relation to war.

"Sir Robert Jones contrasted preventive with corrective orthopedics. The former is the task of every surgeon in the field, and, in so far as it meets with success, it limits the necessity for the corrective practice of the trained orthopedic surgeon, part of whose work is the deliberate infliction of the original injury and the treatment of the case over again. He paid a tribute to the work of the surgeons in France, who, he said, had shown greater initiative and had made more progress than we had at home. But gunshot wounds of the femur remain one of the great tragedies of the war, both by reason of the mortality from shock and the frequent deformity and shortening; and the lecturer rightly devoted an important section of his address to an analysis of the causes of failure and the means desirable to effect a drastic improvement. Efficient fixation and continuity of treatment should be the two guiding principles in fractured femur, to be put into practice by what Sir Robert Jones called efficient 'team work,' including the trained nurse and orderly, as well as the surgeon; and the patient should not be lost sight of at any stage of his *via dolorosa* from the regimental aid-post until the War Office finds him fit again for service or hands him over to the Ministry of Pensions to be made a self-supporting and independent citizen. Many of the suggestions outlined in the address have, we understand, already been adopted at the front, and there are few more striking object lessons of the war than the orthopedic team work, in organizing which Sir Robert Jones has had so large a share."

A BRITISH TRIBUTE TO DR. JANEWAY.

In a recent issue of the Journal we published a brief obituary notice of the late Dr. Theodore C. Janeway, of Baltimore. The following more extended sketch from the *British Medical Journal* deserves republication as evidence of the personal and professional esteem in which Dr. Janeway was held by his British colleagues:

"Professor Janeway was about forty-five years of age, and was the son of Dr. Edward G. Janeway, a distinguished consultant physician of New York City, who died about ten years ago, and was one of the leaders of the medical profession in the United States. After taking his degree at Yale University, he studied medicine and graduated from the College of Physicians and Surgeons in New York. He became a teacher almost from the day of his graduation, and at various times was connected with the leading New York hospitals, including Bellevue, St. Luke's, and the Presbyterian. On the retirement of Dr. Walter James he was appointed to the Chair of Medicine at Columbia University, New York. Four years ago, when a liberal grant from the Rockefeller Foundation made it possible for the trustees of the Johns Hopkins University, Baltimore, to place the Chairs of Medicine, Surgery, and Pediatrics on a whole-time basis, Professor Janeway was called to occupy the Chair in Medicine in that university, a chair previously held by Sir William Osler and Professor L. F. Barker, and which he occupied at the time of his death. This decision on the part of the trustees of that institution initiated a new departure in medical education in the English-speaking world.

Professor Janeway was an enthusiastic investigator, and availed himself of the clinical material and laboratories in the various institutions he was successively connected with for carrying out the researches he became interested in. He was one of the pioneers in the study of the effect of disease on arterial blood pressure, and about ten years ago published an excellent volume on the subject. At the time of his death he was actively engaged on a revision of this work. His contributions to medical literature have been very numerous and important. He has published noteworthy papers on diabetes mellitus, dealing with the metabolism and treatment of the disease. In recent years he had been especially interested in the study of nephritis, utilizing the newer methods of studying this disease, such as Ambard's coefficient, the estimation of the non-protein nitrogen in the blood, and the various forms of functional renal tests, as a means of determining the prognosis and of ascertaining the best dietetic treatment in each individual case. He published several papers on this important subject. As a member of the Board of Trustees of the Rockefeller Institute in New York, he was keenly interested in the investigations carried on there by Cole and his associates concerning the various strains of the pneumococcus and the specific serum therapy of pneumonia—the disease from which he himself unfortunately succumbed.

Professor Janeway was also to the front in the popular fight against tuberculosis, and was ever ready to give his assistance in the campaign being waged against this devastating disease. His interest in this subject was further manifested by the part he took in the establishment of the Post-graduate School for the Study of Tuberculosis at Saranac Lake, New York, in memory of Dr. Trudeau, and by the fact that for the last three years he was president of the Laennec Society at the Johns Hopkins Hospital, Baltimore, a society organized there by Sir William Osler some fifteen years ago for the study of tuberculosis. Before this society nearly all the leading students of tuberculosis in the United States have presented papers.

When the United States declared war on Germany in April, 1917, Professor Janeway was called into active service in the Army Medical Corps, of which he had been for several years a member. Until a week before the Johns Hopkins University Unit sailed for France, in the latter part of June, 1917, it was his intention to go with the unit as chief of the medical division. His friends insisted, however, that he could probably serve his country better by remaining in the United States as head of the department of medicine in the Johns Hopkins University and in an advisory capacity to the Government. With considerable reluctance he was persuaded to remain, and since then, with the rank of major, he has occupied a desk in the office of Surgeon-General Gorgas at Washington, where his scientific training and organizing ability have been of the greatest service to his country.

As a bedside teacher and clinical lecturer, Professor Janeway had few equals. He was a fluent speaker and a clear thinker, and had a remarkable memory for recalling cases previously observed in order to elucidate phases of the particular subject under discussion. He possessed the admiration and devotion of all his friends and *confrères* in the University. In his death the Johns Hopkins University sustains a severe loss, especially at a time when a new departure in medical education was being given its first trial, and when every other important medical school in the United States was watching the experiment.

Professor Janeway's home life was charming. His was a devoted family. His house was a rendezvous for the younger medical men and for the senior medical students. All busy men usually find time for one or more hobbies. Professor Janeway was very fond of amateur photography and of music. For many years he had been accustomed to spend his vacations with his family at a delightful summer colony in the Adirondack Mountains in Essex County, New York, where he was able to indulge himself in his chief exercise, that of long walks. Those who knew him well mourn a sincere and devoted friend, and our sympathies go out to every member of his family in their sorrow.

Sir William Osler writes:

'The death of this distinguished teacher from pneumonia, at the early age of forty-five, is a severe loss to scientific medicine, and, following so soon upon that of Dr. Mall, is another hard blow to the Johns Hopkins Medical School. Dr. Theodore Janeway's life justified a singularly fortunate birth and breeding. The son of an unusually able physician, Dr. Edward G. Janeway—a strong-fibered, honest man, who rose to the first rank in the United States—nature and nurture combined to make his path easy. Connected at first with the New York University, in 1909 he became professor of medicine at Columbia, and began a successful reorganization of the methods of teaching and investigation. He collected able young assistants from different parts of the country, and it is not too much to say that by precept and example he put a new spirit into clinical medicine in New York. His "Clinical Study of Blood Pressure," published in 1905, admirably illustrated the application of physiological methods to bedside problems. With a first-class training and great energy, he soon became recognized as the leader of the younger group of physiological clinicians who have been quietly but surely upbuilding and transforming American medicine. When, in 1914, the Johns Hopkins Medical School accepted the Rockefeller bequest on condition that a certain number of the clinical professors should be whole-time, Dr. Janeway was naturally the choice in medicine. He entered upon a novel and untried position, but judgment is strongly in favor of the experiment as carried out by Dr. Janeway. With ample private means, rare constructive ability, and a keen capacity for research, there were combined in him all the elements for a successful whole-time teacher. He upheld and extended the ambition of the clinic to be not alone a school to train men in the knowledge of disease, but in the methods of dealing with its unsolved problems. The published work of the past three years shows that he and his pupils were engaged in the best type of clinical research. When the United States declared war he was among the first called to coöperate with Surgeon-General Gorgas in reorganizing the medical department of a great civilian army. He became deeply interested in getting the young American physicians trained to meet the many novel conditions of practice in France, and only a few weeks ago the writer had a long letter from him full of plans and details. His death is a sad loss to us all—the cruelly premature death of a man who has a great work in hand.' "

LETTSOM AND THE LONDON MEDICAL SOCIETY.

In the issue of the *British Medical Journal* for January 12, 1918, appears a valuable and exhaustive account by Dr. Sir St. Clair Thompson, of John Coakley Lettsom and the foundation of the medical society which bears his name. This was delivered as a presidential address before the Medical Society of London in October, 1917, and the following representative extracts from it may serve as a less complete sketch of the medical life of London in the late eighteenth and early nineteenth centuries and of one of its more distinguished figures:

"John Coakley Lettsom was one of twins, and was born in 1744 and died in 1815. The following sketch of his career may be more interesting if we recollect that he had no great social or family influence, that he never attended any noted school or had a regular university course, that he was not a Fellow of the College of Physicians, that he never held any Court appointment, and was not on the staff of any well-known London hospital. He may have had his good turns of fortune, but he had few advantages in his birth, education, and upbringing, and the success of his evidently healthful, happy, vigorous and useful career was due almost entirely to his own application, his keenness in his profession, his love of humanity, the breadth of his interests, his zest for life, and his happy disposition.

He was born in the West Indies and may have had some native blood in his veins, for he refers in a letter to the suggestion, without denying it, that he had the 'volatility of the Creole, with the plodding industry of the German.' He had no sister, and as he was sent to England at the early age of six we cannot claim much home influence in forming his character. He never saw his father again. He was sent to a small school of 40 or 60 boys at Penketh, in Lancashire, kept by a member of the Society of Friends, for he belonged to a Quaker family, and he lies buried in the Friends' Burial Ground, Little Coleman Street, Bunhill Row. While at this school he came under the influence of the well-known Quaker minister, Samuel Fothergill, of Warrington, the younger brother of the celebrated Dr. John Fothergill, of London, and from this more or less accidental acquaintance we can trace an influence on the career of Lettsom and the origin of our own Fothergillian gold medal. At this small day-school Lettsom remained only until the age of fourteen, and during this time, if he learned little Latin and less Greek, he had the much greater advantage of acquiring a knowledge and love of nature by being allowed and encouraged to join in the usual country sports of schoolboys of a former generation. Following the hounds on foot, sometimes assisted by pole-jumping, bathing and swimming, the use of bow and arrow, fishing, sliding, and long days spent in nutting or bird-nesting, not only helped to form a vigorous and active constitution, but gave a keenness in observation, a resourcefulness in emergencies, a quickness of eye, and a love of fellowship with nature, which the present generation runs the risk of losing, with its exaggeration of formal games confined within monotonous playing grounds.

Lettsom's education finished in his fourteenth year. His father was dead, and his mother in the far West Indies had married again. He was then sent to Liverpool for a business training, but at the end of a year circumstances arose which resulted in his being apprenticed as a pupil to Abraham Sutcliff, a surgeon and apothecary at Settle, in Yorkshire. If the school in Lancashire helped in the promotion of Lettsom's physical vigor and powers of observation, it is to his five years' residence in Yorkshire that we may ascribe the opportunity for the acquisition of a love of learning, much book lore, habits of work, training of memory, and the faculty of managing patients. His master, Sutcliff, was an excellent classical scholar, though quite self-taught, and under his guidance he made such progress in Latin that he was able to study in that language the works of Boerhaave, Winslow, and others. We should remember that in the eighteenth century Latin was still a living language, for Lettsom, like all physicians of the time, could follow lectures in it at foreign universities, discuss medical matters with colleagues of various countries in Latin and, by its medium, submit himself for a diploma at Leyden. He records that he 'attended the lectures of Innes, Sinclair, Plummer, and Rutherford in that language (*i.e.*, Latin), in which I was pretty well qualified to maintain a conversation or dispute.' With a party of friends, he shared the expense of procuring a French master from London, so that he not only could read the language with ease, but could speak and write it fairly well.

At the end of his five years in Settle, and at the age of twenty-two, Lettsom, in 1766, started for London, where he was without a relation and did not know a friend. His subsequent career is so well epitomized in a letter he wrote twenty-five years later that I cannot do better than transcribe it:

'London, December 31st, 1791.

Medicine is rather a practical than a brilliant art and depends upon study as much as genius. Poverty led me to physic. I was placed with a country apothecary, whose fee was moderate. I had no particular predilection for medicine. I never possessed genius; my memory was bad; I made dictionaries and tables of my own invention; to assist memory, I formed indexes of what I read, and by industry acquired something. I came to London, and saw Dr. (John) Fothergill, my ambition was inflamed, and I dared to say, London shall be my theatre; but having no more money than to carry me through the hospitals, I could not attend many lectures, and upon this depended my improvement; for instead of hearing and learning of lectures, I was compelled to learn at the bed of sickness. Here I saw nature, and learnt my art without the leading-strings of professors. I acquired an early habit of behaving with kindness to the sick, and having known want, I knew how to sympathize with distress. After two years in an hospital, I went to the West Indies to get assistance to bring me upon the theatre I now act. Six months abroad enabled me to visit London, Edinburgh, and Leyden, and ultimately to sit down in the first city; and I know not why any other person, with £500, may not do the same.

Yours respectfully,
J. C. Lettsom.'

This is a good letter with a brave ring in it, revealing much of our Founder's character, both by what it states, and also by what it omits. Lettsom does not mention in this letter that though he returned, for the first and only time in his life, to his native island to get assistance, his first action on arrival in the West Indies was to free the fifty slaves he had inherited. Apart from these slaves, and a small portion of land, he was not possessed of £50 in the world.

The 'assistance' which he went to seek on the Island of Tortola he himself created by starting practice there at the age of twenty-three, and in the short space of five months he amassed the surprising sum of £2000. He must surely have had a keen sense of the business side of his profession if at this age, as a first start, and in an insignificant West Indian Island, he could earn from his profession at the rate of £4800 per annum. His income later on was equally astonishing.

But his large practice and all these multifarious occupations did not exhaust Lettsom's boundless activity. His various interests and his general culture, added to his hospitable and cheerful character, brought him into contact with many of the most celebrated people of his generation.

Lettsom was associated with some of the most celebrated men of his time, an age rich in historical personalities. We have seen how he was frequently received by King George III; he records his impressions of hearing Pitt and Fox speak in the House of Commons; he corresponded with 'General Washington, of America,' Dr. Rush of Philadelphia, and with Benjamin Franklin; Sir Charles Linné (Linnæus) wrote to him in Latin; he studied under Dr. Akenside (the author of the 'Pleasures of Imagination,' whom he found 'the most supercilious and unfeeling physician he had hitherto known'); amongst the founders of the Royal Humane Society (1774 he came in contact with Dr. Oliver Goldsmith, Dr. Heberden, and William Fox; he interrogated George Bidder, the remarkable eight-year-old boy who lived in St. Bartholomew Close, who could not write and scarcely read, yet made long arithmetical calculations (May 17th, 1815); he came across Joanna Southcott, and attended Lady Huntingdon; he met Braham at musical parties, and he dined with Wilkes, Boswell, and Lee the American; he knew the celebrated Lady Hamilton and was very grateful to her for her kindness to his son when visiting Naples; Sir William Hamilton, 'loaded with years and honors,' visited him at Grove Hill; it is not clear if he ever met Lord Nelson, but the great sailor expressed his 'respect and admiration' over several of the letters written by Lettsom; amongst his intimate friends were Edward Jenner, of Berkeley, in Gloucestershire, and Babington, who nearly invented the laryngoscope. Boswell, whose verses I have already quoted, was a frequent visitor at Grove Hill, and Dr. Samuel Johnson must often have called in there on his way to tea with Mrs. Thrale at Streatham.

As I have said, Lettsom's good income, which he spent so generously, was earned by constant hard work. As early as the age of 23 he records that he seldom prescribed for fewer than 50, and often twice as many, patients before breakfast. When he was 38 he writes that, 'sometimes for the space of a week, I cannot command 20 minutes' leisure in my own house.' A year later he writes, 'since 1769, when I first settled in London, I have not taken one-half day's relaxation, and I cannot get to Grove Hill above once a fortnight.' In 1791 (he was then aged 47), he observes, 'during the last 19 years not one holiday have I taken, and this will probably be the last of my life, unless sickness compels me to seek leisure.' The 'holiday' here referred to consisted in travelling by coach to Margate, spending two hours on important business there, and returning the same day—144 miles in the day and night. In another letter he records that his practice had not suffered him to sleep in his own bed for 13 following nights, and he evidently spent much, not only of his days, but of his nights, in his travelling coach, for one correspondent reproached him for 'converting his carriage into a dormitory and a suttling-booth.' His carriage served him for still another purpose; he was a voluminous writer, and yet nearly all his letter-writing was done in his carriage. He used up three pairs of horses daily. When we recall the condition of the roads in the eighteenth century, the pace at which his coach must sometimes have travelled, and the non-invention of stylographic pens, it is astonishing to glance at the number, length, and completeness of the letters which have been preserved, and to read, when he was 60 years of age, that 'my professional duties incessantly occupy me, and compel me to write all my essays in my carriage.'

If all these strenuous days and nights had been devoted solely to his extensive practice, we should not be surprised. But his interests and self-imposed duties were spread over a large variety of subjects, and he rendered important public services as a philanthropist. In 1770 he founded the General Dispensary in Aldersgate Street (the first of its kind in London); he established the Sea-Bathing Infirmary at Margate; he was one of the founders of our own Society; he was an active member and a lecturer of the Philosophical Society; he was one of the founders of the Royal Humane Society; he was a friend and supporter of Edward Jenner and an active supporter of the recently introduced vaccination for smallpox; the reform of prisons was responsible for his friendship and admiration for John Howard, and the amelioration of the condition of the poor and helpless was his constant care. He was the first man to introduce into England the mangel wurzel, as is jestingly referred to in the verses I have quoted, and he always kept up his interest in botany, agriculture, and fossils. He wrote a book called the 'Naturalist's Companion,' which ran through three editions. He pointed out the use of birds—even crows—and of moles in Nature's economy, and pleaded for their preservation. He anticipated our cult of the open window and the researches of Leonard Hill when he wrote his 'Essay on the Effects of Heated and Stagnant Air.'

Soup-kitchens met with his entire approval; the manner of preparing the various kinds of soups is minutely noted in his pamphlet, and the best receipts are given for various articles of diet. Alas, that, after some 125 years, our soups should still be execrable and our cuisine a by-word amongst the nations! In 1798 he published a tract entitled 'Hints Respecting the Effects of Hard Drinking.' In 1795 he wrote a tract on 'Hints Respecting the Chlorosis of Boarding Schools,' with advice as to games, diet, clothes, cleanliness, etc. He was greatly interested in the history of medicine. The *Kadaververwertungsanstalt* in Germany, about which there has recently been some commotion in our press, would appear, from a letter of Lettsom's, to have been anticipated by 124 years. In 1793 he writes: 'A friend of mine has lately discovered the art of changing human flesh into spermaceti candles. This is not a fable. He means to light up the large room of the Royal Society with the leg of a man. I advised him to go to the swamps of Dunkirk, where he might find materials sufficient to supersede all the tallow of Russia. If this project succeed we shall refine on the custom of the ancients in burning their dead. We may burn our friends over a supper or pipe. This scheme may puzzle the Materialists about collecting the remains against the last day.'

Certainly his constant 'succession of employments,' his enormous practice by day and by night, his long coach journeys, his multifarious social engagements, his hospitable entertainments, the care of his garden, his voluminous correspondence, and his extensive publications fill one with wonder. When we recollect that this full life was lived without our modern aids to despatch in the way of secretaries and stenographers, telephones and telegrams, railways and motor cars, one is the more astonished.

This being Lettsom's personal appearance, what was there in his manner of work to explain all he got through? His biographer gives as the following explanation: 'To a naturally good capacity he united the greatest degree of perseverance. This enabled him to surmount various obstacles that in the course of his practice naturally occurred. The want of a good memory obliged him to be methodical, and by great, and it may be said a truly surprising, regularity, he so economized his time as to be capable of engaging in the immense variety of occupations alluded to.' These notes to help his defective memory are elsewhere referred to as amounting to no less than 40,000. Lettsom, although a keen and independent observer, a ready writer, and a frequenter of our Medical Society, never made any striking contribution to medical science. He had no great hospital appointment; he had no pupils to spread his fame; and he had no position at the Court or in the College of Physicians to give him prestige. His success in practice must have been due to his own personality, his sincerity, his great industry, and his direct influence upon his patients. It is abundantly evident from his letters that he enjoyed not only the exercise of his art but the opportunity it gave his broad humanity to be a real comforter and friend to his patients. He evidently had the happy knack of getting on easy terms with his patients; he had Mirabeau's *'don terrible de la familiarité,'* for he writes, 'I would rather be familiarly happy than acquire distant veneration.'

It was possibly this equable temperament, and this placidity in the presence of disaster, which led to the well-known lampoon:

'When any sick to me apply,
I physicks, bleeds, & sweats 'em;
If after that they choose to die,
What's that to me,
I LETTSOM.'

His pliability may have led to his being caricatured in the *Westminster Magazine* of September, 1782, under the title of 'Dr. Wriggle or the art of rising in physic.' He philosophically refers to this as 'Very complimentary.'

As a fervent disciple of his friend Edward Jenner, he warmly espoused the cause of vaccination at a time when it was still abused and opposed, with the result that 'in Germany vaccination had nearly extinguished the smallpox' and 'was more general in every part of Europe than in England.' Evidently this British discovery of medicine in the eighteenth century met with the same reception in its native land as did Lister's in surgery in the nineteenth century. His support of the Humane Society, his enthusiasm for the improvement of prisons, his divagations into the work of the Philosophical Society, certainly show no self-seeking, did not improve his professional status, encountered strong opposition, and required much courage. His crusade for the mangel wurzel, as is seen in Boswell's verses, only exposed him to ridicule. He did not flinch at opposing fashion, or fear to show that he had a frugal mind, when he animadverted upon the practice of wearing the hair powdered, as unnecessarily consuming a vast quantity of flour. He undertook the ungrateful task of exposing quackery. Courage could never have failed him, and it must be due to his *suaviter in modo* that he was able to do so much and yet preserve his position and his friends. An instance of this courage in private life is shown by the charming, delicate, and feeling letter he wrote to his friend Boswell, deploring that 'in scenes of pleasure which I have cordially enjoyed. . . I have observed, not merely a too frequent use of the glass, but that mixture of liquors which, as a professional man, I can add, tends to injure the best human fabrick.' This required courage as well as tact, and was done in such an evidently sincere and friendly way that we are glad to see that Boswell in his reply wrote: 'I am not cheerful at present; the visible wearing away of Sir Joshua Reynolds depresses me much; and, besides, I have not been so attentive as I should be to your most friendly recommendations as to regimen. *Spero meliora.'*

Lettsom's vitality must have been enormous. Although as early as his thirty-ninth year he talks of 'the buffetings of his slender habit and weak constitution,' yet in his sixty-sixth year he writes, 'I am as alert as in the days of my youth.' Still he is sufficiently anxious at times about his health to write, 'I fancy immediately upon illness that I am going to the Majority; but,' he at once adds, 'feeling some little comfort in having done something in the world, which persuades me that I shall meet my predecessors with pleasure, I soon sleep my distempers off.' He must have been a sound sleeper, for, as I have already narrated, he often did not have 20 minutes' leisure in a week; he passed 19 years in London without a single holiday; and from the age of 23 he was 'in perpetual exertion' in his profession.

To such a temperament as Lettsom's death came as he would have wished it—swiftly and mercifully. On Oct. 22, 1815—Waterloo year—he assisted at a post-mortem examination, remaining for two hours in a cold room. Next day he felt chilly and unwell. On the 25th he wrote a note saying he had had a rigor, followed by a dreadful night, but that he was up and intent on seeing a few patients. He added, 'For the last 27 years I have not been confined by illness.' Two days later he was urged to seee Dr. Babington, but answered 'that he should be better in a few days, and that he wished for no one to attend him.' His dauntless spirit, in spite of the entreaties of his friends, took him out to see a poor patient in Whitecross Street, but on his return he had to be lifted from his carriage, and that evening took to his bed. Even here, and in spite of excruciating pain, which prevented him from turning without assistance, he was eager to get reports on his patients and to make arrangements to attend the approaching anniversary of the Philosophical Society. On the following day, Oct. 30, he appeared improved, but died on November 1, 1815, only five days after he had been out to visit his last patient.

I have completed this sketch of our Founder's life before describing when and how our Medical Society came into existence. Lettsom's multifarious writings were frequently issued in the form of short pamphlets to which he gave the title of 'Hints.' On June 23rd, 1773, he issued a pamphlet entitled 'Hints on the Establishment of a Medical Society of London.' The vigor with which he followed up design by action is shown by the fact that the Society was inaugurated that same year, and the completeness with which he planned his scheme is demonstrated by observing that the 'statutes' he drew up in 24 pages are in such order and detail that there will be found but trifling points of difference when we compare them with our present rules of 145 years later. After an introduction, in which he says that societies 'excite a generous ardor in liberal minds and raise even envy itself into useful emulation' and that 'the principal part of our knowledge must be ever derived from comparing our observations with those of others,' he points out the advantages of discussion, the usefulness of honorary rewards, and the virtue of a medical library. We still follow Lettsom's original design in numerous details of the Society's regular existence. Naturally, having received the distinction of following the illustrious Lettsom in this honorable chair, I turned with particular interest to inform myself of his directions to the Presidents of all time. I note that the President 'shall regulate all debates, and prevent any from being prosecuted upon trivial subjects,' and that 'all members shall pay implicit obedience to the President in the execution of his office'! The only one of Lettsom's statutes which we appear to have quite neglected is No. 4, Chapter IV, where it is enacted that 'the President, whilst in the chair, shall be covered, except when addressing himself to the whole Society'!

The early meetings of the Society were held in Lettsom's house, in Sambrook Court, Basinghall Street, and its first home was in Crane Court, Fleet Street. Here the Medical Society remained until 1788, when Lettsom presented it with the freehold of a house in Bolt Court, Fleet Street, where it was established until 1850. The house was valued at £2500. It is rare for benefactors to make such handsome gifts during their lifetime. The shifting of the centre of medical life more westward led to our then taking a house in George Street, Hanover Square, and we were finally established in our present house in 1871. The fine picture in this room shows a group of the Founders of the Society, the central figure being Lettsom standing up in the act of presenting the deeds of our Bolt Court house to the President. This oil-painting by Samuel Medley is a valued possession of our Society. Medley was the better able to execute this as he was the associate and intimate companion of Lettsom, Sims, Babington, Blair, Hooper, and Jenner. The painting contains 22 life-like portraits of our Founders, most of them being the leading medical men of the period. It is doubtful if there exists another medical picture containing so many actual portraits of well-known individuals. Edward Jenner is represented standing close to the left shoulder of the President. It will be noticed that his figure is smaller than the others and somewhat out of perspective. This is because Jenner was not one of the original Founders and did not appear in the picture as originally painted. His portrait, in consideration of his celebrity, was painted in later. It will be noticed that the President is seated, and following Lettsom's 'Hints,' he remains covered and is wearing his cocked hat.

The Fothergillian medal, 'in gold of 10 guineas value,' was founded by Lettsom in a letter addressed to the Fellows of the Society on May 25th, 1784. In 1791 Lettsom himself won the prize essay for the Fothergillian gold medal. He delivered the annual oration in 1778, choosing as a subject 'History of the Origin of Medicine.' He said he had to deliver this oration at short notice, but was able to effect it by the facility with which he could refer to his 40,000 notes! How did he manage it in those days before card-filing systems were invented? On March 8th, 1804, he again delivered the annual oration, 'On the Origin of Vaccine Inoculation, with a Biographical Account of Dr. Jenner,' to whom the Fothergillian gold medal was then presented.

In 1850 the Society perpetuated the name of our founder by establishing the Lettsomian lectures.

The published records of the Society's work appeared under the title of 'Memoirs' or 'Proceedings,' and, later on, under the present one of 'Transactions.' We find they exist from 1787 to 1805, and from 1810 to 1817, but between these two periods there is a hiatus. Subsequently there appeared only one volume in 1846 and another in 1861. The publication of the 'Transactions' was resumed in 1872 and has continued annually ever since.

As our 'Transactions' covered the period of the Peninsular and Waterloo campaigns, I looked through them to see in what way they reflected the military medicine and surgery of the period. I confess to considerable surprise in not finding a single communication reflecting the wars in which our country was then engaged. This is striking when we remember that in the session of 1915-16 every single communication made to the Society was on a war subject, with the exception of the annual oration by myself on 'Shakespeare and Medicine.' But it is also noticeable that the Boer War is reflected in our 'Transactions' by one solitary communication on 'Typhoid Fever.' This shows that our previous wars have been of the nation's life a thing apart—the present world war embraces our whole existence.

I had occasion last year in 'Shakespeare and Medicine' to point out that our Society possesses the only record of the nature of the death of our national poet. It is curious that we also possess a record of the death wound of our national hero, Nelson. The Minute Book of the Medical Society for Dec. 23rd, 1815, contains the following: 'A letter was read by Dr. Gillespie from the surgeon on board the *Victory*, who dissected the wound of the late Admiral Nelson, describing the progress of the musket ball. It passed through the left shoulder, penetrating one lobe of the lung, and, after perforating the vertebrae, was lodged in the surrounding muscles.'

The rest of the chronicles of the Medical Society, and all that it has done, are they not written in the handsome volumes of the 'Transactions'—a storehouse of interest and instruction to all our members?

In this sketch of our Founder I hope I have succeeded in strengthening the loyalty of all Fellows to the oldest Medical Society in London, and in conveying to your minds the attractive picture of the Founder which I have received from a perusal of his life and letters. It is well summarized by his biographer, who describes Dr. John Coakley Lettsom as 'good, humane, benevolent. We have lost in him the sensible, firm, and upright friend, the able, honest, and experienced physician, and the pleasing, instructive companion of a social hour.' Our Society need seek for no better exemplar."

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SOCIETY NOTICE.

Worcester District Medical Society.—The next regular meeting will be held Wednesday, February 13, at 4.15 p.m., in G. A. R. Hall, Worcester.

Program:

1. Experiences of an American Surgeon in a British Base Hospital. By Major Kendall Emerson.
2. The Halifax Disaster. Illustrated by Lantern Slides. By Major Peter O. Shea.

Ernest L. Hunt, *Secretary.*

Correspondence.

AMERICAN DOCTORS IN ENGLAND.

Milton, Mass, Jan. 9, 1918.

Mr. Editor:—

The following word has just been received from one of the large cities in Essex County, England, a region which has received many air raids and where a large contingent of men is constantly in training. It gives a glimpse of what manner of men we have given to the hospital service and how warmly they are welcomed and appreciated.

"It seems so fine that England and America are allies, now, both working for the same great cause. We were all so rejoiced when America joined in the war and our hopes are centered in that splendid Old Glory.

"My sister, Mrs. G., is on our local Food Control Committee and finds it interesting, if very hard, work. Her special province is inspecting potatoes. She has been meeting some of the American doctors who are stationed here at the military hospital and she has invited them to her house. Everyone is so pleased with these doctors and they are everywhere welcomed. Everyone notices and comments upon their courteous manners not only to outsiders, but to the non-commissioned officers and privates in the ranks, so very kind, friendly and entirely informal. Some of the R.M.C.A. have told me how pleasant they were to work under, so alert and practical, treat people as on an equality and have absolutely no 'side' or 'swank' about them. My sister is struck with their attitude toward women, and judges by them that all American women receive both courtesy and consideration.

"At my sister's suggestion, the Mayor and Mayoress paid the American doctors an official visit of welcome at the hospital. It was a jolly visit, a good tea being served in the doctors' little sitting room which was full to overflowing. They had started decorating for Thanksgiving Day, and there were bits of holly hung on nails around the bare walls. The Mayor then invited all the American doctors to a tea at the Town Hall on Thanksgiving Day, specially to be held in their honor,—the first official notice ever taken of the great American day. The Aldermen and their wives were asked to meet them, and the regalia and civic treasures were laid out for their inspection. (A magnificent building, rich in splendid paintings and historical relics.) The doctors had a hearty reception. They were taken out to see the City lions, especially the Castle, with its ancient dungeons, the old Priory and the beautiful Abbey gateway. As they moved up the street they caught sight of our American flag father had hung from the window. Off went their hats and they looked so pleased. Afterwards, my sister had them to late supper and the table was decorated with my own tiny American flags which you sent over. So you see how much we think of your fine medical men over here."

Mary Fifield King.

◆

RECENT DEATHS.

Dr. Edward Page, the last surviving member of the first dental class to graduate from Harvard University, died in January. Dr. Page was born at Groton, Mass., Dec. 4, 1826. He was graduated from Harvard Medical School, and was one of the organizers and first president of the Harvard Dental Alumni Association and treasurer from 1874 to 1880. He was treasurer of the Massachusetts Dental Society from 1869 to 1897.

Charles Parker Lyman, M.D., died at Los Angeles, Calif., on February 2. Dr. Lyman was born in 1847 and for fifteen years was Dean of the Harvard School of Veterinary Medicine at Cambridge, Mass. He retired from that position in 1902. Dr. Lyman is survived by his widow, a daughter and a son, Dr. Richard P. Lyman of Lansing, Mich.

The Boston Medical and Surgical Journal

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Original Articles

ACUTE LOBAR PNEUMONIA.*

BY F. C. SHATTUCK, M.D., BOSTON,
AND
C. H. LAWRENCE, M.D., BOSTON.

IN 1889 Coolidge and Townsend published an analysis of 1000 consecutive cases of lobar pneumonia, comprising all those treated at the Massachusetts General Hospital, from 1822 to that date. This paper presents an analysis of all cases of lobar pneumonia treated at the same hospital from 1889 to 1917, and a comparison of statistics with those obtained from the earlier material.

Our series, as compared with Coolidge and Townsend's, may be said to represent the results of the new régime in medicine as contrasted with the old. Until near the end of the period covered by the former paper, treatment was heroic, and the fresh air and cold air methods had not been introduced. Living conditions, especially those influencing the respiratory tract, were extremely different—crowded trolley cars, factories and tenements; steam heat and poor ventilation, were not the prominent factors in the spread of respiratory infections that they have since become.

Even the nationality of the hospital class has changed markedly since 1889. Immigration had not then reached the great heights it attained prior to the outbreak of the present war, nor were so many different nationalities represented by the incoming aliens.

It is our purpose, in this paper, to determine what the effect of all these changes has been upon pneumonia as seen at the Massachusetts General Hospital, by comparing our findings with those of Townsend and Coolidge, and to bring their work down to the present time.

From the hospital records for the twenty-eight years between the dates mentioned above, we have collected 3,291 cases of lobar pneumonia, while in the sixty-seven years covered by the other paper the total was exactly one thousand cases. These figures immediately suggest that pneumonia is actually increasing in in-

TABLE I.

Year	Number of Medical Patients	Cases of Pneumonia Total	Died
1889	1310	76	23
1890	1334	46	15
1891	1171	57	18
1892	1228	57	20
1893	1160	92	[illegible]
1894	1261	[illegible]	11
1895	1299	[illegible]	30
1896	1606	67	34
1897	1443	58	12
1898	2000	91	17
1899	1808	111	30
1900	1812	114	31
1901	1711	127	28
1902	1550	110	30
1903	1759	132	37
1904	1986	161	48
1905	1997	[illegible]	34
1906	1919	139	[illegible]
1907	2021	150	37
1908	[illegible]	[illegible]	39
1909	2059	168	[illegible]
1910	2159	176	54
1911	2460	[illegible]	38
1912	2696	141	42
1913	2569	107	28
1914	2523	146	29
1915	2793	121	27
1916	[illegible]	126	31

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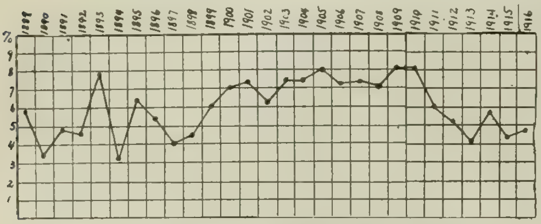
* A sequel to the paper published by Coolidge and Townsend in 1889, and based on the cases of the Massachusetts General Hospital from 1889 to 1917.

cidence, but it must be remembered that the total number of medical cases admitted to the hospital, and its capacity have greatly increased. The preceding table shows the number of medical cases admitted to the hospital each year, the number of cases of pneumonia admitted each year, and the number of deaths among the latter during the past twenty-eight years.

The ratio of pneumonia cases to total medical cases is shown graphically in Chart I.

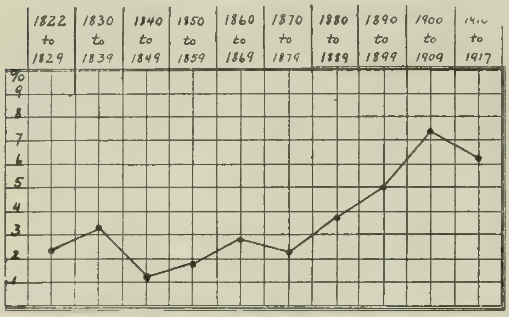
Chart I.



Percentage of cases of Pneumonia to total Medical Cases. By Years.

A study of this chart indicates that there has been no very marked change in the yearly incidence of pneumonia, and shows further, that the number of cases in any one year is subject to marked fluctuation. From 1900 to 1910 the average number of cases was higher than in the previous decade; in the seven years since 1910, the average number has again fallen. Reference to Chart II, however, indicates that there has been an actual increase in the number of cases of pneumonia, as compared to the number of total medical cases, during the past five decades. In the 1870-1879 period the ratio was 2+, which was not materially different from the preceding periods. Thence it rose steadily, reaching the figure of 7+ between 1900 and 1909, and falling only to 6+ during the last seven years.

Chart II.

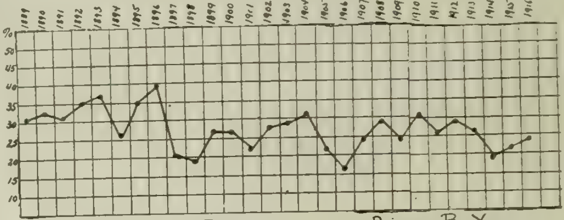


PERCENTAGE OF CASES OF PNEUMONIA TO TOTAL MEDICAL CASES. IN DECADES.

It is possible that a fraction of this increase in the incidence of pneumonia, may be due to an increased use of the hospital for the treatment of that disease as compared with others. The percentage of tenement dwellers is constantly increasing, and pneumonia is a disease not advantageously treated in the crowded quarters from which the majority of the hospital patients come. Further, that class is gradually becoming less averse to going to a hospital, so that it seems possible that an increasing percentage of pneumonia, as compared with other medical diseases, is being sent to the hospital for treatment. It does not seem probable, however, that this is enough to account for the whole increase mentioned above. Nor can it be laid to increased efficiency in diagnosis. Lobar pneumonia is usually not difficult to recognize, and was probably diagnosed as accurately in 1870 as it is today. It must be concluded, therefore, that there is a definite, though not remarkable, increase in the disease, for which no definite explanation appears. Changed conditions of housing, and overcrowded stores, workshops and street cars are probably contributing factors.

Of even greater interest is the question of mortality. Chart III gives the percentage of mortality from pneumonia by years, from 1889 to 1917. It will be seen that there are marked variations in the yearly mortality rate, the highest being almost 40% in 1896, the lowest about 16% in 1906. In general, the trend is slightly downward—at no time during the past five years has the rate reached a point as high as was maintained during the first five years of the period under consideration. During the past five years, however, the hospital has opened a special medical department for children, with a resultant increase in the number of cases of pneumonia during the period of life when the mortality is low, and this factor must be considered in accounting for the general decrease in mortality during that time.

Chart III.

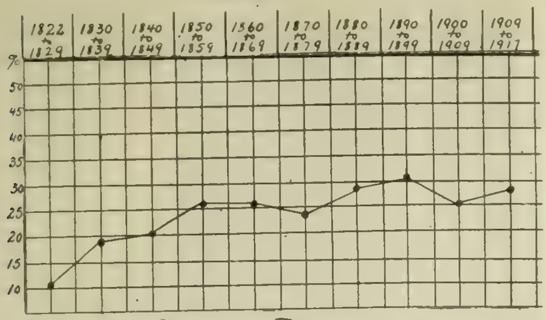


Percentage of Deaths from Pneumonia to all cases of Pneumonia By Years

If the yearly mortality rates are collected by decades, and the results thus obtained compared with those given in Coolidge and Townsend's figures for the period 1822 to 1889, it will be seen that there has been a fairly steady increase in the mortality rate from pneumonia during the past ninety-five years. The rise, however, tends to diminish as time goes on.

Coolidge and Townsend noted this increase from decade to decade in 1889, and in an attempt to explain it, analyzed each case, noting the age, sex, race, previous health, temperance or intemperance in the use of alcohol, and also the presence or absence of complications. They further noted the month of the year in which each case occurred, the site of the lesion in the

Chart IV

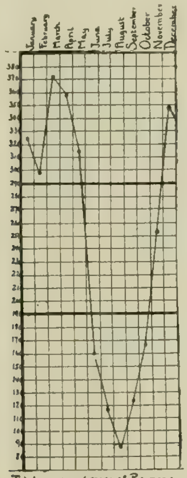


Percentage of Deaths from Pneumonia to all cases of Pneumonia by Decades.

lung, and the duration of fever till death or recovery.

A similar analysis of this series of cases has been made, for the purpose of explaining, if possible, differences in the two groups. Each factor will be considered in the same order as that used by Coolidge and Townsend. Chart V gives the total number of cases of pneumonia in each month during the years 1889-1916 inclusive.

Chart V.



Total number of cases of Pneumonia in each month.
Chart V

There is no significant difference between the curve shown here and that plotted by the previous writers. In their chart, the highest point was reached in April instead of March, and the lowest in July instead of August, but the differences in each case are insignificant. It is our experience, as it was theirs, that the percentage of mortality by months is too irregular to be of any value in explaining the general mortality.

The site of lung involvement shows no particular change during the past ninety-five years. Our table contains combinations of lobes not mentioned by Coolidge and Townsend, such as right upper and middle, and right lower and middle lobes, and for these we are largely beholden to the roentgen ray. But the relation of right to left sided involvement, and the percentage of cases in which both lungs were involved, show similar figures. Our figures for relative frequency of right and left sided involvement are: right, 56.2%; left, 36.4%. Their corresponding figures are: right, 63.9%; left, 34.8%. Our figures show a slightly diminished incidence of double pneumonia, but the difference is only 4.3%.

Table II.

Distribution of Lung Involvement in 942 Cases

	Number of Cases	% of Total.	Died	Mortality
Left lower lobe	276	29.2	68	24.6 %
Right lower lobe	235	24.9	68	28.9 "
Right upper lobe	111	11.7	27	24.3 "
Both lungs	69	7.4	43	62.3 "
Entire right lung	69	7.4	26	37.6 "
Right lower and middle lobes	52	5.6	17	32.6 "
Left upper lobe	35	3.7	12	34.2 "
Entire left lung	32	3.3	17	53.1 "
Right middle lobe	31	3.2	5	16.1 "
Right upper and middle lobes	19	2.0	7	36.8 "
Right upper and lower lobes	13	1.3	7	53.8 "
Total cases right sided involvement	530	56.2	157	29.6 "
Total cases left sided involvement	343	36.4	87	25.3 "

Mortality, as affected by the site of the lesion, shows but little difference in the two series. The mortality for involvement of the right side is slightly greater in our series than in theirs.

Although the site of lung involvement is no aid in explaining changing mortality, it presents two interesting points for consideration. First, the right side is involved twenty per cent. more often than the left. That this may be due to anatomical factors is suggested by the facts that the right lung is also more frequently involved in tuberculosis, and that effusions into the pleural cavity are more often right than left sided. The difference in blood and lymph circulation to the two sides perhaps accounts for the effusions, while the straighter right bronchus may make infection of the right lung easier than the left.

It is likewise interesting that though the right lung is so much more frequently involved, the death rate for the two sides is practically the same. The reasons for this seem more apparent. Involvement of the left lung imposes a greater mechanical embarrassment upon the heart by reason of the solidification so near it. Moreover, analysis of cases collected during the past five years shows that pericarditis, a complication with high mortality, occurs much more frequently in left than right sided pneumonia. In our series, 70% of the pericarditis was associated with left sided lesions.

The time at which death is most likely to occur during the disease has varied little since 1822. Coolidge and Townsend found that more deaths occurred during the eighth day than any other; in our series the seventh showed the highest figure, but difference between that and the eighth is slight and is insignificant when the difficulty in many cases of accurately determining the onset of the disease is considered.

The duration of fever in the cases that recovered showed the same variation, as may be seen from the table. Again the differences are insignificant. Termination by lysis or crisis was noted in 266 of our cases. Of these 192 ended by crisis, 74 by lysis. Coolidge and Townsend's

TABLE III.

Day of Death.

	1889-1917		1822-1889.	
	No. of Cases	Percent	No. of Cases	Percent
1st day	1	0.4	0	0
2nd "	2	0.8	0	0
3rd "	5	2.0	7	3
4th "	15	6.0	7	3
5th "	25	10.0	19	7
6th "	27	10.8	14	6
7th "	45	18.0	19	7
8th "	25	10.0	31	13
9th "	24	9.6	26	11
10th "	13	5.2	22	9
11th "	20	8.0	17	7
12th "	12	4.8	10	4
13th "	2	0.8	7	3
14th "	1	0.4	9	4
3rd week	17	6.8	23	9
4th week	6	2.4	7	3
5th week	1	0.4	5	2

figures for 212 cases were: Crisis 128, lysis 84. No definite conclusion can be drawn from these small series.

TABLE IV.

Duration of Fever.

	1889-1917.		1822-1889	
	No. of Cases	Percent.	No. of Cases	Percent
2 days	0	0		
3 "	4	0.7		
4 "	8	1.4	15	2.3
5 "	36	6.3	35	5.3
6 "	57	11.0	55	8.4
7 "	93	18.0	176	17.7
8 "	89	17.3	119	18.2
9 "	55	10.7	88	15.4
10 "	50	9.7	79	12.0
11 "	39	7.7	46	7.0
12 "	23	4.4	29	4.4
13 "	21	4.0	19	2.9
14 "	11	2.1	26	3.9
15 "	5	0.9	12	1.9
16 "	3	0.5	5	0.7
17 "	4	0.7	5	0.7
18 "	5	0.9	2	0.5
19 "	1	0.1	2	0.3
20 "	4	0.7	3	0.4
21 "	3	0.5		0.5
OVER 21 "	13	2.5		1.9

Coolidge & Townsend.

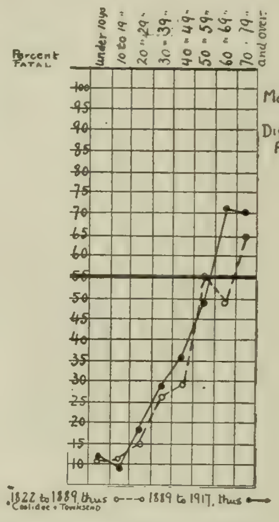
An analysis as regards relative incidence in males and females, shows that the former are much more prone to the disease. Nearly 68% of our cases were in males. In the former series, 72% of all cases occurred in men, and this ratio seems to hold in British private practice. The greater exposure of males to cold, wet, and extreme fatigue, their greater tendency to alcoholic excess and the greater frequency with which men are sent to the hospital, would account for the difference.

TABLE V.

	Men.			Women.		
	No. of Cases	Died	Mortal %	No. of Cases	Died	Mortal %
May 1, 1889 to Jan 1, 1900	576	181.	31.4	186	56	30.1
Jan 1, 1900 to Jan. 1, 1910	938	238	25.3	449	109	24.2
Jan. 1, 1910 to Jan. 1, 1917	538	148	27.6	241	68	28.2
Total May. 1, 1889 to Jan. 1, 1917,	2052=67.8%	631	30.7	976=32.2%	262	26.8

Coolidge and Townsend found the mortality the same in the two sexes. Our figures show a slightly higher mortality for males—30.7% against 26.8% in females. Here again alcohol, and perhaps arteriosclerosis, will explain the difference.

CHART VI.



The factor of age in determining the mortality from pneumonia is more important than any other. As shown by Chart VI, the mortality, after the first ten years, increases markedly with each decade up to the seventh, when it becomes about stationary. In our own series, the mortality is slightly higher in the first decade than the second. In the cases from 1822 to 1889 the opposite was the case. This is probably due to the increased admission to the hospital of children of the poor, among whom general nutrition is not good. Coolidge and Townsend's figures are based on ten cases, of which one died. Our series comprises 476 cases, showing the great relative increase in patients under ten. Of those who died in the children's medical department (these figures are based on 60 cases collected since that department opened) 88% were under one year old, an additional 8.7% were poorly nourished. Subtracting these cases we should find the mortality for the first decade 3.3%, and the mortality rate would be a straight line from beginning to end.

Our figures agree with those of the previous writers until the sixth decade is reached. At this point, theirs fall abruptly, while ours continue upward. The authors of the previous paper explain the break in their line by the statement that 60% of their patients in that decade showed neither complication nor intemperance, and further state that a similar chart, based on 412 cases in their more recent years, did not show the break. It is to be concluded, then, that there is not a diminished mortality from pneumonia in the sixth decade, but the reverse. Indeed it will be seen that the increase in mortality is greater than for any other decade.

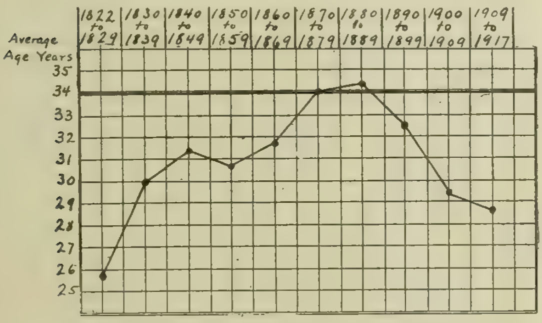
Table VI.

May 1 1889 to Jan. 1, 1917.

Age of Patient	No Cases	% of Total No.	Died	Mortal.%
Under 10 years	476	13.5	66	13.8
10 to 19 "	329	11.8	33	9.1
20 " 29 "	626	22.5	115	18.3
30 " 39 "	580	20.8	169	29.1
40 " 49 "	431	14.0	154	35.6
50 " 59 "	292	10.4	145	49.6
60 " 69 "	100	2.7	72	72.
Over 70 "	48	1.4	34	70.8
Total	2882			

Is there an explanation for this marked increase? We feel that it lies to some extent, at least, in the development of arteriosclerosis as a prominent factor in man's existence at about that time. It is true, of course, that arteriosclerosis is a process of insidious onset and gradual development, but it is equally true that its effects are most marked after sixty. To determine its effect upon the course of pneumonia, we analyzed the cases during the past five years. Ten cases of pneumonia were found which showed well marked arteriosclerosis, according to the records. Of these eight, or eighty per cent., died. It seemed fair to believe, therefore, that it is an important factor in the greatly increased mortality of the sixth decade; and in default of other explanation, the alleged increasing incidence of arteriosclerosis in the community may be advanced as one factor contributing to the increasing death rate from pneumonia. It is probably less important in hospital patients than in private practice.

Chart VII.



Average Age of cases of Pneumonia in each Decade.

Since age is so important a factor, our cases were plotted according to their average age, by years and by decades. No positive conclusions can be drawn from this chart. There has been a steady decline in the average age of patients admitted since 1889. This is partly due to the increasing number of children admitted. The table furnishes no explanation of the increasing death rate.

This conclusion is opposed to that of Coolidge and Townsend, who found an increasing age average from decade to decade, and who believed it an important factor in accounting for the increasing mortality.

The effect of previous health and temperance of the individual is noted in Table VII. The interesting conclusion to be drawn from this table is that intemperance in the use of alcohol increases the mortality among otherwise healthy individuals until it practically equals that among those of delicate health. That increasing intemperance cannot be advanced as an explanation of the increasing death rate, is shown by the fact that Coolidge and Townsend found 109 intemperate patients in their series, while in ours, comprising three times as many individuals, only 214 were noted. The evidence afforded by these figures is, of course, not very definite, since the possibility of error is great. There is, however, no ground for believing alcoholism to be on the increase among the patients studied. Our mortality figures as influenced by previous health and temperance are essentially the same as those of Coolidge and Townsend.

Table VII.

Influence of Previous Health & Habit.

	No. of Cases	Died	Fatal Percent.
1. Delicate	144	55	38.0
2. Healthy & Intemperate	159	60	37.7
3. Healthy & Temperate	365	84	23.0
4. Healthy	161	32	19.8
5. Intemperate	55	29	52.7
Healthy (3+4)	526	116	22.0
Intemp. (2+5)	214	89	41.5

Table VIII.

May 1, 1889 to Jan. 1, 1917.
Most Common Complications in 3167 Cases of Pneumonia in Order of Frequency.

Disease	No. Cases	% of Total Number	Died	Mortal.%
Empyema	100	3.1	29	29.0
Alcoholism	70	2.2	48	68.5
Acute Otitis Media	81	2.2	7	8.6
Acute Fibrinous Pericarditis	50	1.7	37	74
Pleurisy with Effusion	40	1.2	4	10
Pericarditis with Effusion	24	0.97	22	91.6
Typhoid Fever	22	0.88	14	63.6
Jaundice	33	1.0	18	54.5
Acute Arthritis	19	0.60	5	26.3
Acute Endocarditis	17	0.54	15	88.2
Abscess of Lung	12	0.48	7	58.3
Phlebitis	14	0.44	1	7.1
Dilatation of Heart	10	0.31	10	100.0
Pulmonary Tuberculosis	11	0.34	2	18.1
Meningitis	11	0.34	11	100.0
Post-febrile Insanity	5	0.20	0	0.0
Acute Nephritis	6	0.18	0	0.0
Pneumothorax	2	0.08	0.	0.0
Pyopneumothorax	2	0.08	2	100.0
Gangrene of Lung	1	0.04	1	100.0
Subdiaphragmatic Abscess	1	0.04	0	0.0

	No. Cases.	Died	Mortal %
Total No. Cases (May 1, 1889 to Jan. 1, 1917)	3157	833	26.3
No. Cases with Complication, Acute and Chronic	688	299	43.4
Uncomplicated Cases	2469	534	21.6

21.7% of 3157 cases had complications, acute and chronic.

The frequency with which various complications of pneumonia occur, and their effect upon the outcome of the disease, is shown in Table VIII. The list does not comprise all complications found. For the sake of conciseness, those complications which had or might be expected to have no influence upon the course of the disease, have been omitted from the table. All complications, however, were used for purposes of obtaining the final figures.

It is extremely hard to compare our table with that compiled by Townsend and Coolidge. In their series of 1000 cases, empyema was noted six times, with a mortality of 50%. In our series of 3000 cases, empyema occurred 100 times with a mortality of 29%. Endocarditis, found 17 times in our series, is not mentioned in theirs. The total figures show, however, that 16.1% of their cases had complications, acute or chronic, against 21.7% in our series. Probably some at least of this increase must be ascribed to increased accuracy of the hospital records, as it is hard to believe that such complications as endocarditis, jaundice, and otitis media did not occur before 1889. The mortality in our series of complicated cases was 43.4%; in the former series, 36.6%. It would be unsafe, however, to ascribe to this factor the increased mortality from pneumonia, for refinements in diagnosis, both ante and post mortem, have undoubtedly swelled our list of complications, while the mortality rate for almost all the complications which can be compared in the two periods has diminished since 1889.

In 641 cases of pneumonia in the last five years of our series, forty-two, or 6.5%, had had previous attacks of the same illness. Of these, fourteen, or 33 1-3%, died. Thirty-six of the series had had one previous attack; ten of these died. Three had had two previous attacks; two of these died. Two patients had had three, and two, four previous attacks. There was no mortality in these two groups. None of these cases happened to be complicated, delicate, or alcoholic. It appears, therefore, that previous attacks of pneumonia slightly raise the mortality rate, but our series is too small to be more than suggestive.

TABLE IX.

May 1, 1889 to Jan. 1, 1917. (Inclusive).

		No. Cases.	Fatal.	% Fatal.
Americans (Includ. Canadians & Colored)		1610	426	26.4
Irish		499	173	34.6
Other Foreigners		779	170	21.8
Not Recorded		39	26	66.6
Included in "Other Foreigners"	English	99	28	28.1
	Italians	259	48	18.5
	Jews	211	40	18.9
	Germans	38	13	34.2
	Swede	40	10	25.0
	Scotch	22	5	22.7
	Canadians (born abroad)	158	46	29.1
	Colored	42	17	40.4
From May 1, 1900 to Jan. 1, 1917.				
Americans (Exclud. Canadians & Colored)		1035	249	24.

The influence or race upon mortality remains to be considered. In our series, 35.3% of the patients were born in the United States, and this class of patients showed a death rate of 24%. Seventeen per cent. were Irish, with a death rate of 34.6%. Fifty-one per cent. were classed as "other foreigners" with a mortality of 21.8%. In Coolidge and Townsend's series, 46.3% were Americans, with a mortality rate of 22%; 37.1% were Irish, with a mortality rate of 25%; 11.9% were classed as "other foreigners" with a mortality rate of 30%. Since 1889, therefore, the mortality rate among Americans has increased 2%, among the Irish 9.6%, and among "other foreigners" it has diminished 8.2%. The relative number of Irish admitted has diminished markedly, that of "other foreigners" has sharply increased. Among these latter in our series, the Italians and Jews were the most numerous, and had the lowest death rates—less than 19%. The former were almost all young, vigorous men. The low mortality among the Jews is probably another example of their racial resistance to pulmonary disease. The increase in the "other foreigners" group should be expected to lower the death rate, and may account somewhat for the drop noted during the last seven years in Chart III. Apparently, however, it has not made its influence felt upon the rate calculated by decades, though it may explain the slight fall noted during the past two such periods.

It is interesting to note the susceptibility of the Irish race to pneumonia as well as to tuberculosis. Malnutrition and alcohol would seem to be contributing factors. It may also be interesting to note the number of different races represented among "other foreigners," some twenty-five in all, and collected during the past five years, and from the pneumonia patients only.

TABLE X.

Nationalities Represented among Pneumonia Cases in Past Five Years.

Americans
Canadians
Irish
Russian Jews
Italians
English
Greeks
Germans
Swedes

Scotch
Polish
Portugese
Turkish
Austrian
Finnish
Swiss
Syrians

Danes
S. Americans
French
Norwegians
West Indians
Roumanians
Armenians
New South Wales

Total 26

To sum up the probable effects on the mortality rate of the factors thus far considered, it may be said that since 1889, the deaths from pneumonia have increased somewhat faster in males than females; that the age of the patient has practically the same effect now that it had then; that intemperance as a factor in the mortality has not increased among the patients in our series, and that the relative number of intemperates is smaller in our series than in Coolidge and Townsend's. The same is true of delicate cases, while the relative number of complicated cases has probably not increased actually to any great extent, though more complications are noted since 1889 than formerly.

The death rate by decades for all patients has shown practically no rise since 1889. During the past seven years there has been a slight decline, caused probably by the steadily increasing numbers of young foreigners among whom the death rate is low.

The increased death rate among the Irish and Americans may be due in part to alcohol, especially among the former, and in part to the more rapid vascular aging of the present day.

If age be as important as our tables indicate, and if "a man is as old as his arteries" then vascular degeneration, which is believed to be increasing at present, may account for the increased death rate from pneumonia in these latter decades, as compared with the first half of the previous century. The apparent arrest during the past twenty years of the upward trend of the mortality curve may be due to treatment, or can be explained by the change in the make-up of population.

Conclusions.

1. In the four thousand odd cases of lobar pneumonia treated at the Massachusetts General Hospital, from 1822 to 1917 (inclusive), the mortality has gradually increased from 10% in the first decade to 28% at the present time.
2. Since 1881 there has been no significant change in the death rate.
3. The number of cases classed as delicate or intemperate has been decreasing during the same period.
4. The apparent increase in complicated cases is probably due to increased accuracy of diagnosis and recording.
5. The relative number of foreign-born patients is increasing, the mortality among them diminishing.
6. The death rate among American-born patients has increased slightly, as has the mortality among men as compared to women. This may be due to a corresponding increase in vascular diseases during the period studied.
7. The mortality rate for pneumonia in the entire series has shown no permanent important change.
8. Treatment has done nothing toward diminishing the mortality from pneumonia in the past ninety-five years. Bleeding, purging, fresh air—the result has been the same. Of particular interest is the evidence offered by our figures upon the effect of alcohol. Its habitual use, during health, in more than moderate amounts, is shown to diminish the patient's chances of recovery. But the mortality rate among those patients who were given large amounts of alcohol during their illness, is no higher than among those given no alcohol and large amounts of fresh air. Our figures do not indicate that alcohol is harmful to those sick with pneumonia. They suggest that the effect of the drug varies with the conditions under which it is given, and that it is not poisonous to those who have high temperatures and are taking insufficient nourishment.
9. No change is to be expected in the results of treatment until a specific is discovered which will neutralize the toxins of the pneumococcus.
10. The results from the serum now in use are encouraging, but limited, and until its use becomes accepted, the treatment of pneumonia must be that best suited to the individual. No routine treatment has been justified by its results.

RECENT TREATMENT OF LOBAR PNEUMONIA.*

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From a pathological standpoint of lobar pneumonia, we all are aware of its definite stages of pulmonary congestion, consolidation, and resolution, or some consequent local metastatic infection. As well clinically, we are familiar with its clean-cut, self-limited picture, ending in recovery or death, and that no longer do we consider it simply as a lung infection, no more than we do typhoid an infection of the intestine alone, but as a general constitutional disease, with local manifestations. But when we come to its treatment, which is only symptomatic and supportive, and difficult and doubtful, there we are halted for a cure. Why does one of our athletic, healthy young men die in a few days of the disease, and a weakling, physically, recover? We don't know how infection takes place, how the organisms are related to the lesions and symptoms, how the patient recovers, and what makes the possibility of recovery and cure. Some of these questions are slowly being solved on theoretical, biological, and experimental grounds, and the work already done experimentally and biologically by investigators, particularly at the Rockefeller Institute, headed by Cole, is the most illuminating, tangible, and progressive that has ever been given to physicians in this most important, infectious disease, where we have been practically helpless. We shall consider only the newer methods of treatment and the grounds on which they are based.

When I speak of lobar pneumonia, I mean pneumonia of one or more lobes, or a part of a lobe, where pneumococci are found in the lesions; for, as you know, occasionally the bacillus of influenza and the bacillus pneumoniae may be the cause of similar lesions as well. A question has arisen as to whether the diplococcus pneumoniae is the primary cause of the disease, for a diplococcus not differentiated from it is found in lobar pneumonia, and organisms with identical characteristics seem to be normal inhabitants of the mucous membrane of the throat and mouth, it being present in 226 out of 398 examined. But their association with the lesion and their frequent invasion of the blood show they play a strong part in the process and probably the most important in prognosis, just as streptococci do in smallpox and scarlatina, the natural infection being due to specific etiologic agents. Experimentally, Wadsworth in 1904, in a series of rabbits caused lobar pneumonia by pneumococci, and at present this view has been generally accepted.

On reviewing the history of the pneumococcus, we must remember that it is not, as formerly thought, to be one race or strain, but a species of many races. Kruse, in 1891, identified 84 different strains or races morphologically, culturally, and in virulence. The next important landmark so to speak, was the discovery by Schottmüller, ten years ago, of what he called the streptococcus mucosus, associated with lobar pneumonia, having as characteristics a very large capsule and certain biological features, one of which is the formation of a sticky, glutinous exudate. As it was more related to the pneumococcus than the streptococcus, it has been called the pneumococcus mucosus, causing a very severe and fatal pneumonia with a mortality from 45 to 66%. Apart from this particular strain, all pneumococci were thought to be generally the same until Neufeld and Händel of Germany, in 1912, first laid the foundation upon which all later work was done. They tested a so-called univalent serum against various races of pneumococci. In experiments on mice, it protected against 15 strains, and against other strains the serum had practically no effect. These atypical strains were not serum-fast, since the serum obtained during convalescence from one of the patients from whom one of these organisms had been isolated, protected mice against the homologous strain and also against one of the atypical strains, but did not protect against the typical strain. They then produced an immune serum against one of the atypical strains, to see whether all atypical strains could be affected by this immune serum, but found this not to be true. Later, they found the second immune serum which protected against only three of the atypical strains isolated by them, but failed to protect against three other strains. These latter three strains they further showed to be individual in their reactions, and not having access to many pneumonias to obtain cultures, they could not determine the frequency of the atypical types, nor study the biological groupings of the organisms.

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* Read before the Waltham Medical Club, December 6, 1917.

The report of this important work was the stimulating influence of the Rockefeller Institute to study all races isolated from lobar pneumonia; and Dochez and Gillespie immunized rabbits to each race, studying their immunity reactions. They found a number of the races were similar and that all this group agglutinated by the serum obtained by the immunization of animals to one of them, and such a serum protected mice from infection with any one of the group. A second smaller series was also found to have common immunological characteristics, but these characters were entirely distinct and different from those of the first group. Finally, a considerable number of races were found with no common immunological features, each race appearing distinct. These facts corroborated the work of Neufeld abroad but were based on more elaborate and extensive research.

To identify these groups or types, the first described was called Type, or Group I; the second smaller series, Type II, the pneumococcus mucosus of Schottmüller, Type III; and the group of pneumococci, having no common immunological characteristics,—a heterogeneous group,—Type IV. Under Type II, further subdivision of a few strains have been very recently made: IIa, IIb, IIx, with the details of which I shall not take up your time. Therefore, the etiological agents in all cases of pneumonia are not the same, for there are many races or kinds of pneumococcus causing the disease, types of a single species. Similar examples we see in typhoid fever, in the differentiation of paratyphoid A and B, culturally and immunologically different, the differentiation of meningococci, and within the year, the typhoid bacillus has been differentiated into more strains, accounting for the non-protection of inoculated patients with typhoid vaccine of one strain, the patient coming down with typhoid fever from another strain. Already is it well known that bacillary dysentery is not due to one strain, but to any one of four,—the Shiga, Flexner, Strong, or Y, and only the anti-serum of that particular infecting strain can cure the patient. Recently, Noguchi in his work on the Treponema pallidum of syphilis has differentiated several strains of that organism. The clinical manifestations of infection by these different groups of pneumococci are not identical, certainly as regards severity, as shown by mortality statistics.

MORTALITY.

	Rockefeller (Cole)			Penn. Hosp. (Lewis)
Cases due to group or type	Cases	Deaths	Per Cent.	95 cases
I.	57		38%	33%
II.	44		30%	27%
III.	17		11%	3%
IV.	32		21%	36%

INCIDENCE OF THE DISEASE.

	Rockefeller			Penn. Hosp.
Cases due to group or type	Cases	Deaths	Per Cent.	Per Cent.
I.	28	7	25%	29%
II.	25	9	36%	27%
III. (Pneumococcus mucosus) ...	17	8	47%	67%
IV. (Heterogeneous)	33	2	6%	11%
Total No. of cases	103			

STILLMAN.

Past five years at Rockefeller, 454 cases of lobar pneumonia.

Cases due to group or type	Cases	Per Cent.
I.	151	33.26%
II.	133	29.29%
IIa.	6	1.32%
IIb.	4	0.88%
IIx.	9	1.98%
III. (Pneumococcus mucosus) ...	59	12.99%
IV. (Heterogeneous)	92	20.26%

From a prognostic standpoint, the determination of type alone is of considerable importance. Type III is the least frequent but most severe, with a mortality from 45 to 66%. Types I and II are less severe but most frequent, with a mortality of about 30%, and Type IV very mild and fairly frequent in incidence, with a mortality around 15%.

Perhaps what I have said already, you may consider is only for the bacteriologist and of no importance to us physicians and our patients. Certainly in treatment of patients with pneumonia, all possible means of stimulation and all known methods for increasing the natural powers of resistance by non-specific measures should be employed, but the progress made in specific serological work is what I want to draw particularly to your attention from the curative standpoint, and a knowledge of it and its application to our cases determines a lessening of our high mortality in lobar pneumonia. From present knowledge, it would appear that the growth of bacteria in the blood is the most serious part of the pneumonic process, and it seems that this, at least, is influenced by the appearance of circulating antibacterial substances. Since 1891, immune serum was made, but proved very inefficient, so much so that in 1904 Anders collected 535 cases of pneumonia treated with serum, and he reported there was no justification for its use. Why it failed we know now, since a pneumococcus immune serum is effective only against the type of organism used in the process of immunization. If, for instance, immunization is carried out with organisms of Type I, judging from experimental studies, it will have no effect on any infection to one of the other types of pneumococci. The same is referable to a serum produced by the injection of pneumococci of Type II. If immunization is carried out with one of the organisms of Type IV, the serum can have no effect on any infection except that due to the same race. In other words, the serum must be univalent and not polyvalent.

To render a serum useful in any type of pneumonia, it is necessary to produce one with high protective power against the type of organism concerned, to have a satisfactory method of standardization of such serum, and to have a method for quickly determining the type of organism in each case. Sera of high protective power against organisms of Types I and II have been produced by the immunization of horses by properly spaced doses of living pneumococci. No satisfactory protective serum for Type III has been made, and the use of one in this type of infection is without justification. As Type IV is composed of strains each immunologically different from the other, no one serum can be made for all the members of this group, but each organism can produce an active immune serum for its particular strain. For the standardization of the immune serum mice have been used, and a method for the rapid determination of the type of organism has been employed. This is important to clinicians and must be carried out in every case to determine whether the infecting organism is amenable to immune serum. A few sputa are collected in a clean receiver, or if no sputum may be had, a vein is tapped, or the area of consolidation is punctured and the blood or sputum, after being emulsified by the bacteriologist with sterile salt solution or bouillon, is injected intraperitoneally in a mouse, it being an animal very susceptible to pneumococci. Four or five hours later, the peritoneal cavity is washed out with salt solution and the exudate cells are removed by slow centrifugalizing, and the bacteria from the supernatant fluid by rapid centrifugalization. The bacteria are washed in salt solution, and this salt solution emulsion is tested for its agglutinative power by adding equal amounts of it and Type I serum, and likewise of it and Type II serum. If within one-half hour the organisms in the first mixture agglutinate, it is a strain of Type I, and its immune serum given intravenously; or if it is agglutinated by Type II serum, then it belongs to that type and No. II serum must be given. Therefore, the type must always be determined and immune serum in amounts of 80 to 100 cc. given intravenously every 6 to 8 hours till the patient's condition changes.

Generally, after giving the injections, a reaction occurs, the temperature usually rising and then falling, except in fatal cases, not necessarily remaining low. It shortens the course of disease, the patient feels better, and intoxication lessens. The serum causes increased agglutinins in the blood, which may be demonstrated three minutes after injection. Where the administration of subsequent doses has not led to a prompt increase of agglutinins in the blood above the previous level, the fall in temperature has been longer delayed, and more serum has been required.

In fatal cases there is an increased invasion of blood by pneumococci and extension of the local lesion, and recently it has been determined that large amounts of soluble inhibiting substances in the blood preventing the action of immune serum and being so large in amount, that no practical amount of immune substances can neutralize them. In such cases the serum may prolong life, but the infection and intoxication may be so great at the start that although the infection may be kept down by the serum, the intoxication cannot be removed, the patient succumbing to this. Hence the importance of giving very large doses of immune serum at the beginning is apparent.

It is impossible to produce a serum against Type II pneumococci to be as active in the test tube, or in the living, as is the serum against Type I organisms, for the horse serum against Type I infection is of such a strength that 0.2 c.cm. will regularly protect a mouse against 0.1 c.cm. of virulent culture, and it has been impossible to produce an immune Type II serum of any greater activity than that 0.2 c.cm. will protect the mouse against 0.01 c.cm. Moreover, the active Type I serum usually causes agglutination of homologous organisms in dilutions of 1-400 or over; the Type II serum usually causes agglutination in dilutions no greater than 1-200.

During infection not only must efficient immune substances be added to bring about a concentration sufficient to sensitize all the bacteria, produce their agglutination, opsonification, etc.; but in addition there must be a sufficient amount administered to neutralize any soluble substances present in the serum, which has the property of neutralizing and fixing the immune substances. The nature of these fixing substances is not positively known. But Dochez and Avery's demonstration, in pointing out the production of precipitable substances in the blood and urine of infected patients and animals, makes it possible. They are responsible for the fixation phenomena. This substance is a precipitin, which early in the growth of the pneumococcus is formed as a readily soluble substance, diffusing into the culture medium; and in human and animal infections, is present in the circulating blood, whence it passes through the kidneys into the urine. It is not yet certain that this substance is responsible for the intoxication that accompanies lobar pneumonia.

The precipitin reaction may be demonstrated in the urine of infected animals or pneumonic patients, even as early as 12 hours after the initial chill, whence a marked precipate occurs by mixing it with the serum corresponding in type with the organism with which the animal or patient was infected. This specific substance is not destroyed by boiling, and is of protein nature. This reaction is found in pleural fluids, pericardial exudates, and the spinal fluid of pneumococcus meningitis. The amount of precipitin substance in the urine seems to be a measure of the severity of the infection, for the mortality is high when it is present, and most recover when absent. This specific precipitin test in the urine is of considerable prognostic value. These observers, furthermore, believe that this substance bears some relationship of the property of capsule development; for Type III the mucosus organism possessing the largest capsule forming most of this substance; Type II, which has smaller capsules, producing less; and Type I, having small capsules, still less, and very little if any in Type IV.

If the patient is treated early, before large amounts of the fixing substance are present, a moderate amount of serum may be sufficient, even though the grade of blood infection be considerable. On the other hand, if the pneumonia has continued for a considerable time and large amounts of the soluble fixing substance are present in the blood, the amount of serum may be very large; and to repeat, though the infection may be checked, the resulting intoxication destroys the patient. Hence you see how important it is to treat very actively at the start in order to neutralize all these substances and entirely and immediately to overcome the disease.

As a result, Cole advises the treating of all patients with Type I infection with large initial doses and to repeat every six to eight hours as long as may be necessary. It is possible that the Type II serum is less effective than No. I serum, not only because its concentration of immune bodies is less than Type I serum, but also because the power of pneumococci of this type to produce fixing substances is more highly developed than is that of pneumococci of Type I.

As after the injection of any foreign serum, there results more or less anaphylaxis, the usual serum sickness, in 10 or 12 days, and it may be acute even after one small dose in susceptible persons, causing suffusion of the face, respiratory difficulty, and vomiting. If this occurs while the serum is being slowly administered, it should be discontinued and in 4 to 5 hours a somewhat larger dose tried again. Progress is being made on concentration of the sera, the immune bodies being contained in a part of the globulin fraction of the protein. As a result, smaller doses of horse serum will be given and less serum sickness will occur. The random employment of immune serum and vaccines is to be frowned on, since the future usefulness of antipneumococcus serum depends upon our careful determination of its use in proper cases with organisms homologous to the serum used. Suffice it to say, that the treatment of pneumonia due to Type I organisms by the homologous serums has reduced the mortality of this type of infection from 30% to 8%. This speaks well for the future, and Cole suggests that a polyvalent serum for all pneumonias is possible and will be produced later.

Is there a medicine that acts specifically in the disease as salvarsan does in syphilis, and quinine in malaria? Morgenroth, and his associates, in 1911, while working on various organic quinines discovered that one of them, ethylhydrocuprein or optochin, exerted some protective and curative action on mice infected with pneumococci and that in the test tube, in weak solutions, these organisms were destroyed. With this as a basis, much progress has been made since grouping of the pneumococci was determined. Moore and Chesney have reported 32 cases treated at the Rockefeller Hospital in conjunction with allied experimental work. To cure pneumonia or pneumococcal septicaemia with this drug, there must be produced a pneumococcidal action in the blood serum, to maintain it as constantly as possible over a period of time sufficiently long to insure the destruction of all the infecting pneumococci, and the concentration of the drug in the body to be harmless to any part of it. These have been pretty well fulfilled. It has a positive bactericidal action on the organisms in the blood and should be given as early as possible in the disease on account of the fewer organisms in the blood. But those in the lung lesions apparently are not affected, as they are mechanically protected by the exudate from the action of the blood. The doses must be large at first to prevent the organisms from acquiring a condition of resistance or "fastness" to the drug which, if occurring, makes later large doses of no avail. This has been shown experimentally to be so, for cultures, by slowly increasing doses for 10 to 12 days, could grow in comparatively high concentration from the drug The best method of administration is by the mouth, as doses so small as to have little bactericidal action when given intravenously, cause serious toxic symptoms, and subcutaneous doses cause much discomfort by painful infiltration of the tissues. Optochin hydrochloride (Merck) given by mouth in capsules is absorbed so quickly that there is a rapid appearance of the bactericidal action in the serum. For the average person of 135 pounds (62 kgm.), 1.5 grams (25 grains) should be given in 24 hours to cause bactericidal action; or at least 0.024 gm. (grain 1-3) per kilo of body weight per 24 hours. The first day an initial dose 0.45 gm. (grains 7½), and every three-hour intervals thereafter 0.15 (grains 2½), for seven doses; and subsequent days ten doses of 0.15 gm., each at 2½ hour intervals. Camphor has been shown to diminish the curative effect of optochin and should not be used. No particular diet is necessary. It is a white powder, soluble in distilled water but not in salt solution. Experimentally it has been found that 3½ hours after giving 0.5 gm. of the drug, it is possible to detect the specific inhibitory action in the patient's blood; it is absorbed faster than it is eliminated in the urine and there results a positive balance in the body. Fluid aspirated after death from a pericardial sac was found to be sterile and to have a bactericidal action on pneumococci, showing it passes through serous surfaces. On account of lack of knowledge of its proper dosage, some serious toxic symptoms were reported, but recently they have been minimized to a great degree. They are principally referable to the eye and ear. Vomiting has been reported, due probably to the extremely bitter taste. Ringing and roaring sounds in the ears, and partial deafness transient in type, disappear when the drug is stopped. The eye symptoms are more serious, and out of 787 treated cases which have been reported, 4½% have had transient amblyopia or amaurosis. Oliver reports one case of permanent, almost complete blindness, the patient receiving 5 grains (0.3 gm.) every three hours, the total amount being 7.7 gm., greater doses than that usually given. In all other reported eye changes, discontinuance of the drug cleared up the symptoms. Dilatation of the pupils suggesting some amblyopia, should be watched for, and it is important that ophthalmoscopic examination be done often to determine any eye changes, and if any found, the drug be diminished or discontinued. The more the daily dose is subdivided, the less frequent are the visual disturbances.

Leschke and others report favorable results from optochin treatment in pneumococcal septicemia. At Rockefeller there was no considerable shortening of duration of the disease under its use. In 787 reported cases treated with the drug, there was a mortality of 12.96%, and in Moore and Chesney's corrected series 19%, where the mortality expected was calculated to be 33%. In all these cases empyema occurred in 1.9%. These figures are encouraging, and even if the drug can't destroy all the pneumococci in the infected area when present in the blood in a concentration sufficient to produce bactericidal action in the serum *in vitro*, nevertheless, if it can prevent a spread of the disease process to healthy lung and prevent septicemia, or metastatic complication, its use may be helpful, as the involvement of hitherto healthy lung constitutes great danger to the patient.

The usage of optochin and anti-pneumococcus serum simultaneously in Group II pneumonias, since the serum alone was disappointing, has been shown by Moore to give markedly increased protective value to the serum. This would seem to suggest that in the specific treatment of pneumonia, perhaps even more favorable results may be expected from the use of optochin and the type of homologous anti-serum, than by either of these remedies separately. Time and experience may make us change the dosage and value of this drug, but to repeat the statistics as quoted, of 787 cases of lobar pneumonia treated with it, with a mortality of 12.96%, with an expected mortality of 30%, surely makes it worth while for our study and consideration. Furthermore, Cole's recent report of 72 consecutive cases of Group I pneumonia treated with a corresponding serum intravenously, with a mortality of 8.3%, whereas among untreated patients in this group the death rate was 25%, bodes well for the future cure of this most important infection. There are many other questions in pneumonia which could be discussed from recent literature with great profit, but if I have stimulated you to study and consider further anti-pneumococcus serum and optochin hydrochloride, this little talk will not be in vain.

RECRUITING NOTES

By Harold W. Dana, Boston,

Captain, M.R.C., U.S.A.

It is not my intention to offer these few suggestions as necessarily representing anything new in medicine, and certainly to most trained military physicians, most of the things here discussed may seem to be a matter of course. Personally, I am not a surgeon nor an orthopedist, so that what I have to say in these fields will not be of interest to specialists along those lines. What I have to present are the things which have impressed me as a newcomer into the service, during six months' work as an examiner of recruits for the Army, and cover what have seemed some of the more difficult points for the general practitioner to decide.

For the Army the Adjutant General has fixed certain standards of weight, and for the Draft Boards the Provost Marshal General has fixed other and similar standards. These tables of weight give a normal minimum weight, from which the examining physician is allowed certain discretionary deductions for each height. This final minimum weight is to be accepted only in those cases where the examiner considers the candidate thoroughly sound in other respects. If we consider that 90% or more of all adults have had tuberculosis in some form at some time during life, and that a large proportion of all chests show some signs of a past or present tuberculosis of the lungs, this seems to me one of the important considerations in deciding whether or not to allow a candidate who is below the normal weight for his height to be accepted for service. If a man be of good weight the presence of dulness or of harsh or bronchial breathing at either apex without symptoms and without râles, is of no importance, probably; certainly we cannot afford to consider it as any disqualification. On the other hand, such signs would influence me against accepting a man who was much below the normal weight. So far as I know, there is no weight in excess of the standard, which precludes the use of any man for some branch of the land service, provided always that he is not too obese, is active, and has feet strong enough to stand up under his weight. This question of strength of feet is usually the deciding factor as to the acceptance of a man above 190 pounds in weight.

Since other conditions than tuberculosis may cause harsh, high-pitched inspiration, and crepitant râles, it may be advisable in some cases to have a re-examination at the end of a week. It is perfectly practicable, when the rush of work is not above the ordinary, to take temperatures on suspected cases, often with suggestive results. Again, since blood pressure determinations are a routine procedure in all candidates for commissions in the line of the army, it is feasible to take the blood pressure in phthisis suspects. Personally, I feel that a low systolic pressure, say below 120, with a pulse pressure below 25, is suggestive of phthisis and in any case indicates a vitality or cardiac competency insufficient for the service.

It was a great surprise to three of us taking routine blood pressures on a group of men under thirty years of age, examined for line commissions, to note the number of tests giving 140 and 150 mm. systolic readings, sometimes repeated in two or three tests in the same person at different hours or on different days. These were all in men who showed nothing in the urine. Several men, indeed, in this group of young men gave systolic pressures of 160 and 170. I am inclined to believe that in some at least of these cases excitement was a factor in producing this increase of pressure.

Another fact which I have found to be not uncommon in men showing nothing else abnormal, is the occurrence of high-pitched inspiration without other signs, at the base of the left lung behind. The cause of this I have been unable to determine.

Upon what grounds shall one decide whether the applicant in question has a functional heart murmur? In the instructions issued by the Adjutant General, and even more fully in those given to the draft examiners, stress is laid upon the importance of secondary signs, such as enlargement of the heart, edema, cyanosis or dyspnea, the presence of secondary signs being considered essential to a diagnosis of organic disease. Richard Cabot has always taught his students that in order to make a diagnosis of mitral regurgitation, there was necessary, in addition to the systolic murmur, the presence of either an accentuated pulmonic second sound, or proof of enlargement of the heart, or both. Furthermore, there has always been great comfort to me in doubtful cases, to find the murmur propagated to the axilla or to the back. When the systolic murmur could be heard in the back, I felt assured that there was an organic lesion. Recently I have seen two recruits in whom the x-ray shadow of the heart was not enlarged, and in whom the electrocardiogram indicated the absence of any organic disease, but with a murmur which was plainly audible in the axilla and in the back. Since then I have seen two other cases in which there was no enlargement of the heart to percussion, with no dislocation of the apex downward, with no increase in the pulmonic second sound, but with a systolic murmur loudest at the pulmonic area, heard at the apex and transmitted to the axilla and to the back. Such cases as the last are quite common among the large number of men whom I have examined in the past six months and are very unsettling to one's preconceived ideas as to the signs of valvular heart disease. It has been suggested to me that such cases as I have cited represent congenital heart disease, and this may very possibly be the explanation of cases where a murmur is transmitted to the back, without enlargement of the heart or accentuated pulmonic second sound. If this be the case, however, then congenital heart disease is commoner than I have been accustomed to believe. While I am willing to admit that a loud murmur at the pulmonic area, best transmitted to a point related to the root of the lung in the back, may in some cases be explained as being of auricular origin, which is the view of some observers, it does not seem to me that this explanation can assume a normal mitral valve;—and I do not feel that this theory covers the murmurs heard at the apex, which are transmitted from the apex, to a point in the back corresponding to the level of the apex. In these questionable cases, the apparent myocardial efficiency, as evidenced by testing the effect of work upon the pulse rate, was normal. Of one thing, at least, I am certain, and that is, that these men with such murmurs as I have described, without cardiac enlargement or increased pulmonic sound, are physically fit for active duty in the army, and have, for any practical purpose, essentially normal hearts.

During the past months, I have seen three cases in which the heart was enlarged to percussion, in which there was a systolic murmur at the apex transmitted to the back, and in one of them there was a dislocation of the apex beat downward. Neither the fact that the electrocardiograph was said to show the absence of a valve defect, nor the statement that the x-ray proved the absence of cardiac enlargement, has satisfactorily disproved the diagnosis of mitral regurgitation which I made in these cases. It does not seem to me that the electrocardiograph nor the x-ray is any more infallible in heart disease, than we know to be the case as regards the x-ray in lung and gastro-intestinal work. Personally I still cannot believe that a cardiac murmur is transmitted to the back, without some organic change from the normal, either in the shape, size or number of the cardiac orifices, or in the valves. To my mind, having the candidate lie down does not give any material aid, in most cases, in differentiating between an organic and a functional murmur.

The question of tachycardia as an indication of valvular or myocardial disease, and the "work test" as mentioned above, are in my opinion of relatively little use except in the stolid, unemotional or bovine individual. For instance, doctors and dentists whom I have examined, almost invariably have a high pulse rate, and this is also true of a large proportion of candidates for commissions. While in theory it is true that when a rapid, nervous heart is put under the strain of added work it will steady and slow down, in practice this does not usually seem to be a fact. Hence while tachycardia is set down in the regulations as a cause for the rejection of recruits, and probably quite correctly, as relating to the class of men enlisting in peace times, it would not seem to me to apply to a considerable number of candidates for the army at present. In any event, considerable judgment must be employed in estimating the importance of a rapid heart in each individual. On the other hand, I feel sure that in some cases, the only remaining indication of a previous endocarditis, where the murmur, as so frequently happens in the case of children, has disappeared, is this tachycardia or the presence of marked excitability under emotional stimuli. In this connection, I do not mean to say that many of these mitral leaks of childhood do not clear up absolutely, leaving no signs nor symptoms of any sort.

Supposing that one is examining such a candidate with a systolic murmur, and one is in doubt as to whether this sound is heard only at the base of the heart, or whether it is also audible at the apex, it has frequently seemed to me that I could hear the murmur better in the posterior axillary line at a level one inch below the angle of the scapula; certainly that I could isolate and identify the sound better at this location than was possible at the apex. To me it has been quite surprising to see the number of athletes, swimmers, distance runners, and basketball players, who have a definite valve leak, and yet are able to continue competition. It would seem as if such men could be used for some branch of the service for clerical positions.

When only one test chart is used for the purpose of testing vision, it is sometimes difficult to determine the degree of sight in the two eyes, particularly where the first eye tested has the better vision. One man who was being tested as to his eyesight, was almost blind in his left eye, but he had memorized the 20/20 line almost perfectly, so that he could read the letters forward and backward, and could skip every other letter successfully. In suspicious cases it is often useful to use a card with a hole cut in it so that only one letter at a time is seen. Also a second chart, kept under cover except when needed for use, is a help. If the waiting line of men have the opportunity to study the chart or to hear the reading of it by preceding men, it aids them to memorize the letters. Usually, by asking the applicant to read every second, third, or fourth letter from either end, one can avoid errors. For this reason, a chart with a large number of letters on each line, is of value. Charts for the eye test vary greatly in the sharpness and clearness of printing. One of the simplest, cheapest, most portable and certainly not the least accurate, of the color vision tests, is a card with eighteen squares of colored paper on it, made by Brown & Burpee of Manchester, N. H., and sold by the Globe Optical Co., Boston, Mass., for 50 cents.

A good many men who have been rejected for the army or for Plattsburg on account of hernia, have this defect remedied by operation and present themselves for re-examination. I have been inclined, in cases where the result was good, to accept such men within a few weeks of operation. Surgeons tell me, however, that these men are not fit for army work in the field under six months after operation. A large number of men have relaxed or enlarged inguinal rings, and in some of them, while there is not definite protrusion of the bowel, there is a definite impulse on cough. While such cases do not represent a definite hernia, there is always risk of symptoms occurring, even if the signs do not increase; hence such applicants should be viewed with suspicion.

To me as a medical man, a candidate who has recently been operated upon for varicocele, or who has a radical operation for the cure of hydrocele, and who presents, as all such patients do, so I am told, a much infiltrated condition of the groin and scrotum in the one case, or marked thickening of the epididymis in the other—such cases, I may say, are viewed by me with deep, inherent distrust. My surgical friends tell me that in such operations one should not expect complete absorption under six or eight months, or even longer, and candidates may safely be accepted in spite of the thickening of the tissues.

Another difficulty arises as to what should constitute a disqualification on account of foot defects. The presence, merely of a very marked degree of flattening of the anterior or posterior arch of the foot, is not a disqualification, since thoroughly flat feet, strong functionally, and without symptoms, may, and usually will, carry weight better than a beautifully shaped, high arched foot. Again, feet, that (so far as the tracks of the soles upon the floor are concerned, seem perfectly normal) may occasion a disqualification of the applicant because of marked pronation, with weakness;—"knock-ankle" as Dr. E. H. Bradford has termed it, and eversion of the foot upon the ankle. Strength, mobility, freedom from symptoms and a consideration of the man's weight are the fundamental points in judging the competency of a pair of feet. Some of the flattest arches that I have seen, have been in men of very light build. Symptoms in connection with the feet are often misleading, since a candidate eager to enter the service will deny ever having untoward symptoms of any sort:—on the other hand, real or alleged foot troubles are a favorite cause for claim for excuse from military duty or for a discharge from the service. Many feet that are flat from the wearing of improper shoes or from lack of the use of the muscles can be much benefited by muscle training, and many cases of pronation can attain a high degree of serviceability by the use of a wedge under the inner side of the heel, the so-called "modified Thomas heel." This is of course difficult to provide in the case of soldiers, who wear out shoes fast, and for whom specially altered shoes cannot be provided in numbers. In this connection, I have been interested to see that the chief orthopedic authority of the British Army,[1] has advised that all soldiers should be provided with shoes the heels of which are higher on the inner side, which would seem to me to be a useful and feasible suggestion.

REFERENCE.

[1] Notes on Military Orthopedics, p. 44, Colonel Robert Jones, C.B., Inspector of Military Orthopedics, British Army Medical Service. Paul B. Hoeber, New York, 1917. (Abstracted in part in Journal American Medical Association, Aug. 4, 1917, p. 401.)

THE ARMY SURGEON OF OTHER DAYS.

BY HOWARD DUDLEY KING, M.D., NEW ORLEANS, LA.

THE army surgeon of the present day is a most fortunate individual if we are to compare him with his brother of the sixteenth century, who rendered service in the English civil wars. The surgeon of those times was poorly paid, and did not enjoy either rank or standing. However, in many instances the pay was fully commensurate with the character of the professional services rendered. In one respect the military surgeon of four centuries ago fared better than his more modern brother in that he was a noncombatant in the fullest sense. The medical man did not figure in the casualty lists. It was rare to hear of a fighting Asclepiad, and still more rare to find a physician's name among the killed, wounded or missing. All throughout the civil wars military surgeons appear to have been treated by both sides as non-combatants, and to have enjoyed certain privileges defined by custom rather than by any set rules or regulations. When in the field they wore a distinguishing badge, and to the credit of both sides the insignia was accorded the fullest respect. No surgeon was allowed on the field without his baldric. Military surgeons were often allowed to enter a hostile camp or fortress in order to treat wounded men of their own side, and seldom was the privilege abused. Medical men falling into the hands of the enemy were not usually retained as prisoners, and in many cases they made no distinction between Roundheads and Cavaliers if human suffering was to be relieved. As an example of the goodfellowship extended the medical men of those days, the following anecdote is most noteworthy. In 1644, Henry Johnson, surgeon of the King's own troops, wrote as follows to the Parliamentary Governor of Newport, Pagnell, asking for the relief of his apprentice who had been captured in a skirmish at Kidlington:

> "It is very well known how careful I have ever been in dressing your wounded men whensoever they have fallen into our hands. Therefore, if you will give him a speedy release and safe pass to Oxford I am very confident that the favor shall not pass without an endeavor of recompense, for if at any time any chirurgeon or wounded men of yours shall fall into our hands my care of getting releasement or dressing those that have need thereof shall manifest how great a favor you have done to your obliged servant."

In the armies raised by Parliament there were usually two or three medical men attached to the staff of the general, who supervised and controlled the medical administration of the whole army. Aside from regimental surgeons, there were also a score of assistants and medical understrappers. In the list of Essex's army there appear a "physician to the train and person," Dr. St. John, and a "surgeon to the train and person," Laurence Lowe. In the list of New Model the names of four medical officers appear among the staff, two physicians to the army, an apothecary to the army, and a surgeon-general to the army. The armies in Ireland and Scotland had each attached a physician-general, a surgeon-general, and an apothecary-general, and this arrangement survived in the post-Restoration army.

The chief of these officials was the physician-general, who was usually a man of some standing, and was paid accordingly. The rate of pay was ten shillings per day, or about $2.50. Next in point of rank and pay was the apothecary-general whose salary was six shillings and eight pence a day, an equivalent in our money of $1.50. The surgeon-general was not alone last in rank, but also in pay. His remuneration never exceeded four shillings or a dollar a day. Cromwell's surgeon-general received no more than the American private of today. Each surgeon had a couple of assistants who received about forty-eight cents a day. In 1651 the surgeon's pay was advanced from a dollar a day to a dollar and a half, or six shillings; in 1655 it was fixed at five shillings, and the economists cut off one of his assistants; in 1657 the surgeon's pay was again reduced to the original four shillings a day. Whenever the matter of economy was broached in Parliament the surgeon's pay was juggled with. Monk, who was in command of the army in Scotland, considered the army surgeons underpaid, and ordered those under his direct command to be enrolled as privates in order to give them an additional nine pence or eighteen cents a day. Dual office holding in military circles thus is not of recent origin. However, Monk seems to have been actuated by kindlier motives than countenancing petty graft.

Very few of the military surgeons of the sixteenth century were really competent men, and not many attained the distinction of being enrolled in the Royal College of Physicians. General Monk vigorously resented one of Cromwell's appointments in the person of a certain Mr. Fish, surgeon to the artillery train. Fish was a former surgeon's assistant who had resigned to avoid a court-martial for misconduct. Monk exercised the greatest care in the selection of his medical officers.

As many of the army surgeons were men of the most mediocre ability, it was customary in important cases to call in other aid. Parliament sent a special physician to Northampton to attend Skippon, who had received serious wounds at the battle of Naseby. In 1651 Cromwell fell ill in Scotland, and two of the leading medical men of London were immediately despatched to Edinburgh by the Council and State. These outside practitioners were always liberally paid for their services.

When a soldier reached a hospital, either through illness or injury, a certain proportion of his pay was stopped to pay for nursing and drugs. There were no movable hospitals attending the army during active campaigning. In 1643, Essex sent the wounded soldiers from the siege of Reading up to London for treatment. An order of Parliament at that time reads "that the Lord General hath been enforced to send back many sick soldiers to be billeted in some remote houses and towns, some miles distant from London till it shall please God to restore them health and ability to again return to his army." The badly wounded were left in villages near the battle field, where a small pittance was usually paid for their medical care, but most frequently they were left to their own devices.

Throughout the first and second civil wars the London hospitals supplied the only permanent provision for the cure of sick and wounded soldiers. St. Bartholomew, Bridewell, St. Thomas, and Bethlem, the most famous of London's hospitals at that time, were freed by Parliamentary Act of all taxes and assessments on the ground that they treated many of the wounded soldiery. In a short time these institutions proved insufficient for the care of the soldiery, and it became necessary to build special military hospitals. Army hospitals were now established in various parts of Ireland, Scotland, and even in Flanders. As to attendance on the patients, there were no hospital orderlies in those days, and the nursing was entirely done by women. These nurses were by special order chosen from the widows of soldiers. The various hospitals drew up rigid regulations governing the conduct of both nurses and soldiers. A soldier who got drunk or used profane language was fined, and a repetition of the offense meant expulsion. A nurse who neglected her duty, or "made any disturbance by scolding, brawling or chiding" was punished in much the same way as the drunken soldier. If a soldier married a nurse both were to be expelled at once.

Clinical Department.

GONORRHEA IN YOUNG MALE CHILDREN, AND ITS TREATMENT.

By Walter D. Bieberbach, M.D., Worcester, Mass.

Urethro-vulvo-vaginitis, due to gonococcus, in young female children is not a rare disease and, especially, this is more true among the poor and children that are housed in institutions. It is easily seen that young female children can readily contract this disease from parents or other older members of the home by direct contagion or indirectly, through the agency of towels, wash-rags, fingers, toilets or bed clothing. Then it has been shown that when one case is introduced into an institution the disease spreads rapidly, probably by the medium of the bath, toilet or towels. This is an affection which recent studies have shown to be much more prevalent than has generally been believed, and it is not uncommon for a physician to see several of these cases during the year. However, gonorrhea in the male child is a rare disease, at least in boys under twelve years of age; in this respect affording a marked contrast to gonorrheal urethro-vulvo-vaginitis observed in the opposite sex. The cause, as suggested by some authors, is an attempt at intercourse, often suggested by a much older female.

I believe that it is the general opinion of the physician that very exceptionally the contagion may be mediate by means of fabrics or by foreign bodies previously infected, being introduced within the urethra. Such cases, I believe, do exist, as I will demonstrate in a boy four years of age, who was referred to my services at the Worcester City Hospital. Too much careful attention cannot be paid to inflammatory conditions of the prepuce or penis, and this is true when one is dealing with a long foreskin where a phimosis exists. When these conditions present themselves and there is a pussy discharge, it is wise to examine carefully the discharge microscopically to try to find out what form of a micro-organism we are dealing with.

It has been shown that in the normal urethra there are micro-organisms identical in all respects with the gonococcus. Identification of these micro-organisms under the microscope is not a proof of the specific infection, and this is more apt to be true if the child is suffering from a phimosis where retained secretions are liable to cause an infection of the urethra. Should an organism be seen under the microscope that resembles the gonococcus, then one should resort to cultivation on artificial media and positively prove the nature of the infection. Therefore, it is wise in all such cases carefully to search for the gonococcus, since simple irritative urethritis is by no means uncommon and is, in the beginning of its course, not to be distinguished clinically from true gonorrhea.

I have had in the last short while the experience of falling flat in my diagnosis in which two male children were referred for circumcision for phimosis, later to find, folowing the operation, that I was dealing with a case of gonorrheal infection. One takes too much for granted that such a condition could not exist in children of six and four years of age, and this led me to believe that I was dealing with a simple urethritis, the primary cause being a tight, long prepuce producing balanoposthitis. However, this one point shows that, regardless of age, one should first proceed in all cases with a microscopical examination, as in children of this age gonorrhea is generally contracted in the ordinary manner.

The cases that I will report will show that it is possible for the male child of very young age to be infected, either by direct or indirect contact.

Case 1. J. P. a boy of six years of age, well developed physically, presented a marked case of phimosis. There was considerable narrowing of the preputial orifice, so much so, that it was impossible to retract the foreskin over the glans penis. About the margin of the prepuce was a copious offensive white discharge. The foreskin was tender, edematous and swollen. At this visit a diagnosis was made of phimosis, the cause being balanoposthitis, due to a long, tight foreskin. The treatment advised was circumcision, and on the following day the child was operated upon. On account of the marked edema, circumcision was performed under ether. A dorsal incision was made and the flaps trimmed. The edges were sutured with catgut. Some few hours after operation the child was unable to urinate. The dressings were removed and the external meatus was found to be pointed and swollen and glued together. On separating the lips of the meatus, there was a free flow of thick white pus, which relieved the child, thus allowing him to pass his urine. Microscopical examination of the pus showed a number of Gram-negative diplococci, both intra- and extracellular. Cultures were made which proved the presence of gonococcus.

A few days after, the mother brought to the clinic the younger child, who was three years old, complaining that he was having trouble similar to his brother. On examination he presented the same condition as the first, except that the foreskin could be retracted over the glans penis showing a free urethral discharge. Microscopical examination of the discharge showed the presence of gonococci, and they were found on culturing. In the case of the boy of six years, both urines were cloudy, containing pus and a number of shreds, showing that he was suffering from an acute antero-posterior gonorrheal urethritis. The first urine of the boy of three years was cloudy, the others were clear and the diagnosis being acute anterior gonorrheal urethritis.

An attempt was made to learn the source of infection. The mother and father were asked to submit to examination; also the remainder of the family, which consisted of a girl thirteen and a boy eighteen years old. The boy was a step-brother to the other two children, his father having been dead for the past few years and this being his mother's second marriage.

The mother and father denied all venereal disease and on examination were negative. The oldest boy of eighteen gave a history of suffering from an acute attack of gonorrhea four months ago. He had been under the care of a physician, and one month before the children were admitted to the clinic he had been pronounced cured. At the time of my examination he had no signs or symptoms of the disease, and from my examination I would say that he was cured. A gonorrheal complement-fixation test was done and reported as negative.

Examination of the girl of thirteen showed that she had a ruptured hymen, and on separating the vaginal wall there was a somewhat free, thin greyish discharge, which on microscopical examination showed the presence of gonococci. Smears made from the urethra were negative. From the absence of the acute symptoms and the microscopical picture, I would say that the girl was suffering from a subacute or chronic gonorrheal infection.

The fact that the three children were suffering from gonorrhea was all that I was able to obtain. It was impossible to get a clear history of any of the cases.

The mother and father could give very little information as to the source of the infection. They stated that the boy of six years and the girl of thirteen attended school every day, while the child of three was kept at home. Furthermore, none of the children were away from home for any length of time. I thought that if some one was sent to the house of the parents to investigate their mode of living, we might be able to come to some opinion as to the source of infection.

The case was reported to the Society for the Prevention of Cruelty to Children and, through their kindness, a female agent was sent to investigate the living conditions of the family. Each of the children was questioned closely, but no information could be obtained from the boys that were suffering from gonorrhea. They were very stubborn and refused to answer questions. The girl of thirteen was taken into a room alone and after careful questioning admitted that some few weeks before, while the parents were away one afternoon, the oldest boy of eighteen placed her on his lap and attempted intercourse. Following this attack she suffered considerable pain and for some time afterwards experienced a burning sensation on urination. She said nothing to her parents of what had happened; the reason for this we are not able to have her explain.

On the day of the examination the boy of eighteen learned on his return home that an agent of the Society had been to the house to investigate the cause of infection. Confronted by his mother on what had transpired, he immediately turned about, left the house and to this date has not been heard from.

My conclusions as to the source of infection in this case was that the boy of six contracted the disease from the girl of thirteen. They both occupied the same bed and the sexual organs of the male child were well developed and much larger than the average child of the same years.

The younger child of three slept with the boy of six on different occasions and probably contracted his infection from discharges that had contaminated the bed clothing.

The girl's infection dates back to the time that she states that the older boy of eighteen attempted sexual intercourse with her. At that time the boy was suffering from subacute gonorrhea and, I believe, infected his step-sister.

In this case we have the direct and indirect method of infection, the older child receiving his infection from the female, and the younger child indirectly from coming in contact with some article that was contaminated with the discharge of the child of six years.

Case 2. T. Mc., a well developed boy of four years, physically and mentally normal. He was admitted to the service for circumcision. *Examination.* He had a marked phimosis with a moderate lymphangitis extending along both sides of the shaft of the penis. The external orifice of the prepuce was reddened, and on stripping the foreskin a thin, white, pussy discharge was noticed. A diagnosis of infected balanoposthitis was made and circumcision was advised. At this visit the child was etherized and circumcision performed by the dorsal slit method. Patient was discharged and advised to return for future dressings. Late on the night of the operation, I was called to the patient't house and informed that the child was unable to urinate following the operation. During the day the mother had called in a physician to relieve the retention, and sedatives and hot baths had been given, with no results. On my visit I found the child to be suffering from pain, walking about the house, straining every few minutes in an attempt to urinate. On stripping the urethra there was a profuse white pussy discharge, of which I made several smears, and later on returning to my office found that they contained many intra- and extracellular Gram-negative diplococci. At this visit I decided there was but one thing to do in relieving the child and that was catheterization, for everything had been done, such as hot sitz baths, by the former physician, with no results. The patient was placed on the kitchen table and a soft rubber catheter, size 10, french, was inserted into the anterior urethra, just to the cut-off muscle, and the urethra was gently irrigated with a hot 2% boric acid solution. Following the anterior irrigation the catheter was removed, boiled, and gently introduced within the bladder. The bladder was relieved of 10 ounces of clear, normal urine and followed by slow irrigation with hot boric acid solution. The child was immediately relieved and soon fell into a sound sleep. The mother was advised to return on the following day for future treatment, which she did, and stated that the boy was able to pass his urine, but was obliged to urinate frequently, about every hour. At examination this time I was able to get pus for culture which showed a gonococcus growth. The urine of the first and second glasses was cloudy and contained pus, showing that the child was suffering from an acute antero-posterior gonorrheal urethritis.

In tracing the source of infection in this case I learned that the mother kept boarders and that in the household there was a female suffering from gonorrhea, and one male with an acute case of antero-posterior gonorrheal urethritis complicated with an acute epididymitis. The child used the same toilet, and was in the habit of getting into bed with these members that were infected. Their habits were such that careful examination showed that the child no doubt received his infection by indirect contact, coming in contact with some infected object such as toilet or bed clothes. In this home was a female child of three years, and special instructions were given as to prophylaxis and care of the child so as to prevent infection. With all care and instruction the female child developed, one week later, a severe urethro-vulvo-vaginitis.

Care and Treatment of the Boys.

Prophylaxis was placed on all cases. The mothers were instructed as to the pussy discharge and ordered to burn all dressings. They were also warned of the dangers of gonorrheal ophthalmia.

The children were placed on a non-stimulating diet, excess of meat was avoided, also highly seasoned, salty food. Liquids were restricted to milk and water, water being used very freely. For the purpose of catching the urethral discharge and keeping it away from the clothing a small bag was made in which the penis was carried. Absorbent cotton was placed in the bottom so as to catch the discharge.

Therapeutic Treatment.

Internally the two older boys, six and four years of age, were given five minims of thyresol in small round capsules three times a day, one hour after meals, while the boy of three received but two a day. From these doses their stomachs and kidneys showed no irritation and they were able to take this amount during the course of treatment, with rest spells in between. Milk and water were forced and bowels were kept well open.

Local Treatment.

Case No. 1 was carried on protargol irrigation with a solution of 1:8000 and gradually increasing the strength to 1:4000. Irrigation was performed by inserting a soft rubber catheter, size 10, french, into the anterior urethra and gently forcing this fluid through by means of a large hand syringe. Following this a clean catheter of the same size was introduced just behind the cut-off and the same solution was forced through the posterior urethra to the bladder. When the child complained of bladder fullness it was removed and the child was allowed to stand and empty the bladder. This line of treatment was carried out every second day, occasionally the child skipped a treatment on account of the mother being unable to come. The younger child of three years never developed a posterior infection, and simple anterior irrigation was carried out. This child cleared up in four weeks, while the one with the posterior infection took six weeks. In case No. 2, hot potassium permanganate was used in increasing strength when at about the sixth week the case was at a standstill, both glasses still hazy and there was a slight daily discharge. The treatment was changed to silver nitrate, followed by a marked improvement, starting with 1:10,000 solution and working down to 1:4000. This last was followed by discomfort to the patient, but was relieved, when too severe, by saline irrigation, which immediately stopped all burning. In seven days all discharge subsided and both glasses of urine were clear and sparkling. After all local treatment was stopped, both children were kept under observation. Repeated swabs were taken from the urethra and were all found at each examination to be negative. Urines of three glass tests were clear and no other symptoms present, the children were discharged as cured. During the course of treatment the children suffered no ill effects. They held their weight and apparently did not seem to be greatly disturbed. By being very gentle and gaining their confidence, I found no trouble in having them submit to treatment.

I believe that this article shows the importance of microscopical examination in children suffering from phimosis; by so doing one is in a position to determine at the first visit the form of micro-organism that is present and at the same time make a correct diagnosis.

Society Report.

BOSTON SURGICAL SOCIETY.

(Incorporated.)

Meeting No. 19.

A clinical meeting of the Boston Surgical Society was held on Monday, November 5, 1917, at the Carney Hospital, at 10 a.m.

PAPILLOMATOUS OVARIAN CYST WITH TWISTED PEDICLE.

Dr. John T. Bottomley operated on a widow, 36 years old, who thirteen months before had found, in the right lower quadrant of her abdomen, a round mass of the size of an orange; a month later there appeared acute symptoms which indicated the presence of an ovarian cyst with a twisted pedicle; these subsided in the course of a few days. The tumor continued to increase in size till, about a month before the woman entered the hospital, acute symptoms again developed in the lower abdomen; these, too, gradually subsided and she now presents a moderately tender, tense, smooth mass rising out of the pelvis almost to the level of the umbilicus and more prominent on the left than on the right side. A preoperative diagnosis of "ovarian cyst with a twisted pedicle" was registered. At operation a right ovarian cyst, size of a football, showing many evidences of recent, as well as old, inflammation, with a thick, short pedicle twisted 1½ turns in a direction opposite to that of the hands of a clock, was first removed. Its papillomatous nature was then evident and consequently the uterus and the other tube and ovary were quickly removed. Suture of the abdominal wound without drainage concluded the operation.

Note. The discovery of the papillomatous projections made the other step of the operation necessary. The tumor was removed through an abdominal incision of sufficient length to ensure delivery of the tumor without rupturing it—something much to be desired in such cases, in the handling of which the short incision should have no place. The pathologist reported, "papillary adenocystoma of both ovaries with hemorrhage and necrosis." The convalescence was entirely normal.

"ESSENTIAL" UTERINE HEMORRHAGE.

Dr. Bottomley operated on a widow, 39 years old, with one child, for metrorrhagia which had been almost constant for the preceding two months, and which, despite treatment, had been present and troublesome for about a year. The physical examination showed little except the general signs of a steady loss of blood. The preoperative diagnosis was put down as "'essential' uterine hemorrhage." At operation the slightly enlarged uterine fundus and the left tube and ovary were removed; the right tube and ovary were left *in situ*.

Note. The real cause of the bleeding was not disclosed by the pathologist, who reported only "slight chronic endometritis." The convalescence was uneventful. Dr. Bottomley had had the patient under observation for a year before operation and was unable to discover the reason for the bleeding, which was not permanently checked by any of the usual remedial measures.

GALL-STONES; STONE IN THE COMMON DUCT.

Dr. Bottomley operated on a woman, 52 years old, who, fifteen years before, had had a definite attack of biliary colic. Since then she had suffered from what she termed "indigestion" until three months before her entrance to the hospital, when she had a very severe attack of pain in the upper abdomen, with chills, sweats and jaundice; she was very ill for nine days and then gradually grew better. She is said to have had "sugar in her urine" for the past year, but in none of the urinary tests made before operation was sugar found. The preoperative examination showed nothing of note except a very fat abdominal wall, with marked tenderness and some muscular spasm in the right hypochondrium.

At operation, a gall-bladder packed full of stones was removed; a single stone, felt in the hepatic duct, was forced down into the common duct and removed; exposure of the common duct was difficult because of the many adhesions present; the pancreas was not abnormal to palpation; the common duct was drained.

Note. The convalescence was not noteworthy except for the fact that, three weeks after operation, bile was still escaping from the drainage wound, though in gradually decreasing quantity.

PROCIDENTIA; CYSTOCELE; RELAXATION OF THE PELVIC FLOOR WITH RECTOCELE.

Operation. Watkin's operation for procidentia and cystocele; Crossen's operation for relaxation of the pelvic floor, attended with rectocele.

Dr. F. W. Johnson operated; the patient, 44 years old, was admitted to the hospital, complaining of falling of the womb, backache and general weakness. Her mother died of cancer of the stomach, one brother died of tuberculosis; the patient's previous history was not important, except that she had typhoid fever twenty-five years before, and said she had been treated for "edema" nine years previously at the City Hospital. She had been married twenty-four years, had had nine children, the oldest 23 years, the youngest 4 years; she had never miscarried; her last menstrual period was in December, 1916. All labors had been normal, as had the puerperia,—except the last one, when she said she had "heart trouble."

For the past year the patient had noticed that "the womb came out of the vagina"; at first it was possible to replace it, but not in the last few months; there was much frequency in micturition, with pain and dragging in the sacral region.

Examination of the urine showed a slight trace of albumen, no sugar, sp. gr. 1.010, with pus and mucus in the sediment. Blood pressure, S. 148, D. 110; hemoglobin 80%, white blood count 9000.

Dr. Johnson operated upon a second case, showing laceration of the cervix; prolapse of the uterus; cystocele; relaxation of the pelvic floor with rectocele.

Operation. D. and C. Emmet's amputation of the cervix; Watkin's operation for prolapse and cystocele; Crossen's operation for relaxation of the pelvic floor, attended with rectocele.

The patient was 40 years old, married for thirteen years; she had had six children, the oldest 12 years, the youngest 2 months; since the birth of the last child, "falling of the womb" had prevented her from getting about for ordinary household duties. There was profuse leucorrhoea: urine examination was negative.

OPERATIVE NOTES.

In the above two cases the prolapse of the uterus and the cystocele were remedied by the Watkin's operation of interposition. This operation should not be performed when future pregnancies are anticipated.

The methods employed which we have found by experience to be the most satisfactory in separating the vaginal wall (cystocele) from the bladder, and in securely fastening the uterus in anteversion to the anterior vaginal wall after removal of the slack, are described below.

Cystocele. A male sound is passed into the bladder and turned around so that its point pushes the bladder downwards and forwards in the median line, and towards the operator. Just below the point of the sound, an incision is made through the vaginal wall, care being taken to go through the *fascia* of the anterior vaginal wall. This incision is carried laterally as far as needed to take in the slack when removing the redundant portion of the anterior vaginal wall. The sound is removed and the tissue on either side of the incision is grasped by two strong-holding forceps (Ochsner), put and kept firmly on the stretch, while a long, pointed, curved scissors (concavity towards the operator) is worked up under the fascia until the point of scissors reaches well beyond the junction of the bladder and urethra. As the scissors are removed they are opened. The anterior wall is then divided its whole length by straight scissors. This method enables you quickly, and without danger, to remove the fascia wholly from the bladder, and from the tissues on the sides. After the uterus is delivered it is fastened to the anterior vaginal wall, every suture including the fascia. It is only by utilizing the fascia that you prevent for good the return of the cystocele. Silkworm gut is used for the first three sutures, the first being passed through the fundus uteri in front and just below the tubes. These sutures are shotted and allowed to stay in place one month. No. 2 chromic catgut is used for the other sutures, and each suture goes through the vaginal wall, including the fascia, and takes up a good bite of the uterus, so that when the operation is finished, the uterus throughout its anterior surface down to the cervix is sewed to the fascia of the anterior wall. An important suture is the one which takes up the bite in the uterus at the junction of the body and neck. When tied, this suture straightens out the lower segment of the uterus, and throws the cervix back.

For the relaxation of the pelvic floor, attended with rectocele, Crossen's operation is done. No. 1 chromic catgut is used throughout in this operation.

The bowels are not moved for several days. The catheter is not used unless necessary, and after each voiding the parts are sprayed off. After forty-eight hours, a short vaginal douche of sterile water is given through a catheter, morning and night. For diet, the white of an egg in one-third tumbler of flavored water is given every three hours when awake, for six days. Water *ad. lib.*

MYOMATA UTERI.

Dr. Stephen Rushmore operated upon a colored woman, 29 years old, who had been married eleven years, but had never been pregnant. Menstruation began at 12 years, had always been regular, lasted 3 to 4 days, never profuse or painful, until the last year, when the flow has increased in amount, and lasted 6 or 7 days, often with clots. There had been a vaginal discharge for the previous four months with dragging down feeling in the back and lower abdomen; patient lost 15 pounds in the last four months. The urine was normal; hemoglobin 75 per cent., and blood count showed 11,000 leucocytes.

Examination showed no sign of infection of the urethra or vulvo-vaginal glands; the outlet was not relaxed; the cervix was fairly well up in the vaginal vault. The body of the uterus was irregular in outline, hard, firm, rising nearly to the umbilicus. A median abdominal incision was made from just below the umbilicus to the symphysis. The liver, stomach, gall-bladder and kidneys were normal. Omentum and intestines adherent in the pelvis by thin, filmy adhesions to the top of the enlarged, irregular uterus. These were freed and the intestines packed back and many adhesions in the pelvis of the enlarged uterus, tubes and ovaries were cut. In the uterus were two myomata, one near the right cornu, about one and one half inches in diameter, extending into the right broad ligament somewhat. The second was about three and one half inches in diameter, globular and extending into the left broad ligament. On account of the adhesions and the impossibility of lifting the uterus, it was removed first, going down on the left side, across the cervix and up on the right side. The tubes were closed, and were adherent, so they were removed with the right ovary. The left ovary was so adherent that only part of it was cut away. The cervix was cupped and closed; raw areas were closed over with peritoneum after suspending the stump of cervix to the stumps of the round ligaments.

The vermiform appendix was normal, and was removed, inverting tied stump through purse-string of linen thread and reinforcing.

Closure in four layers with catgut and silkworm gut in fascia and skin.

Comment. Owing to the shape, size and position of the larger myoma and the adhesions of the tubes and ovaries, it was difficult to expose the ovarian vessels, so that the incision for removal was made between the uterus and the left tube and ovary. Then by grasping the tumor with heavy, long-toothed forceps, it was easily rotated in the pelvis, exposing the left uterine vessels. These were tied and cut, and the incision was carried across the cervix, rotating the uterus still further, and up on the right side between uterus and tube and ovary. Where space is limited and the operator can see only a little way ahead, by working close to the uterus and tumor, injury to important structures can generally be avoided. When the larger mass is removed there is plenty of room for dealing with the adherent structures laterally, which also are near the large blood vessels.

A portion of the left ovary was not removed because it makes very little difference with these patients, clinically, whether a fragment of the ovary is left or removed, and leaving it is much easier than digging it out and perhaps getting raw areas which require packing and a drain to check oozing of blood.

The stump of the cervix was left. In the first place, the probability of danger from the cervical stump is slight, but the danger is, of course, a very serious one; cancer may develop. Then the post-operative mortality and morbidity is slightly greater after pan-hysterectomy. As to the advisability of removing the cervix, opinion is divided at present, but the older view, preferring leaving in the stump, still prevails.

A cone-shaped piece of cervix was removed before closure. By many this procedure is preferred to the use of the cautery. The knife gives two clean surfaces which heal quickly when approximated and, by carrying the incision low into the cervix, most of the gland-bearing area can be removed. The cautery gives a slough which must separate before healing takes place and which may easily become infected. Furthermore, it does not seem probable that the use of the cautery is more likely to prevent carcinoma later than is the knife. If anything is thought necessary to prevent carcinoma, the reasonable procedure is to remove the cervix.

The stump of the cervix was suspended by the stumps of the round ligaments. This gives support to the cervix, important in multiparous women, and makes covering over raw areas with peritoneum easier, appropriate for all cases.

OLD INFECTIOUS ARTHRITIS WITH ANKYLOSIS OF THE METATARSO-PHALANGEAL JOINTS.

Patient gave a history of old infectious arthritis of ten years' duration in which the joints of the toes were ankylosed, all of the metatarsal shafts being dislocated, resulting in the heads of the metatarsals being so prominent that the patient when walking bore weight directly on the heads, and causing almost total incapacity.

Dr. W. R. MacAusland (by invitation) operated, making a semicircular incision on the bottom of the foot, removing the distal heads of all metatarsal bones.

Note. Results of this excision are most satisfactory in those types of long-standing arthritic cases in which the heads are dislocated, resulting in tender, painful forefeet.

HYPERMOBILE SEMILUNAR CARTILAGE.

Dr. W. R. MacAusland (by invitation) operated upon a young woman who, for two months, had complained of pain and swelling in the right knee; the pain came on suddenly, the joint "caught" when walking and it was impossible to fully straighten it. She had been in the hospital six weeks; when she was admitted the knee was in 10 degrees permanent flexion; there were pain, sensitiveness and swelling in the region of the internal semilunar cartilage, and there was a small amount of fluid in the joint; x-rays were negative. Under rest and strapping there had been no improvement.

A lateral incision was made on the inner side of the knee and the internal semilunar cartilage found to be hypermobile. Nothing else was found in the knee joint to account for symptoms. This cartilage was removed *in toto.*

Patient since that time has made a satisfactory and rapid convalescence; 90 degrees motion in knee joint and walking without pain at the end of three weeks.

Note. The findings of persistent swelling, tenderness, and pain in the region of the internal semilunar cartilage, together with small amount of fluid, and particularly limitation of motion in complete extension, point toward injury of the internal semilunar cartilage. It is not necessary for a cartilage to be actually broken or entirely torn from its attachment to give symptoms. Removal of the cartilage *in toto* gives satisfactory results.

WALTER C. HOWE, *Secretary.*

AMERICAN PROCTOLOGIC SOCIETY.

NINETEENTH ANNUAL MEETING, HELD AT NEW YORK, N. Y., JUNE 4 AND 5, 1917.

The President in the chair.

Officers elected for the ensuing year:

President, Jerome M. Lynch, M.D., New York, N. Y.

Vice-President, E. H. Terrell, M.D., Richmond, Va.

Secretary-Treasurer, Collier F. Martin, M.D., Philadelphia, Pa.

Executive Council:

1. Alfred J. Zobel, M.D., San Francisco, Cal.
2. Jerome M. Lynch, M.D., New York, N. Y.
3. T. Chittenden Hill, M.D., Boston, Mass.
4. Collier F. Martin, M.D., Philadelphia, Pa.

The next Annual Meeting will be held in Chicago, Ill., June 10, 11, 1918.

THE PLACE OF THE PROCTOLOGIST IN A DIAGNOSTIC GROUP.

By Alfred J. Zobel, M.D., F.A.C.S., San Francisco, Cal.

(Abstract.)

Dr. Zobel in his address stated that the charter members of the American Proctologic Society were the pioneer teachers and practitioners of modern proctology. Through the efforts of the fellows of the Society, proctology has received recognition as a specialty, both from the American Medical Association and the American College of Surgeons.

Attention was again called to the fact that but few of the undergraduate medical schools give any adequate instructions in entero-proctology, by qualified men. In sharp contrast to this, it is noted that in every postgraduate medical school in the country there is a department of rectal and colonic surgery, whose existence is amply justified, not only by the number of patients which it treats, but by the large attendance of postgraduate students.

It is urged that the undergraduate medical schools, particularly those attached to universities, should take heed of the demands and needs of modern medicine, and that they should begin to realize that failure to impart instruction in entero-proctology, and in the other recognized specialties which have arisen in late years, impairs their standing as thorough teaching institutions.

Up to about twenty years ago, all the medical needs of a community were attended to by the so-called family doctor. But, year after year, changes have been going on until today is the day of the specialist.

This era of specialism gives evidence of the advancement and betterment of the whole profession; it means far more efficient service rendered to the public than it has received in the past.

It now requires a close and almost undivided attention to that subject alone, if one wishes to keep abreast with what is being accomplished in any special line of work.

With more knowledge and longer experience, the specialist better realizes the close relationship existing between his particular field and all the other parts of the body. He further learns that while, from devoting his entire attention to his own special work, he excels therein, he consequently lacks knowledge, experience and adeptness in that of others. As a result, lately, among progressive men, there has arisen a movement to form what is known as "diagnostic groups." Group diagnosis is not a new idea. It has been used for years in the post-graduate schools, which are the only institutions possessing a staff of clinicians in every specialty of medicine and surgery. The present movement is simply an elaboration and an extension of the original idea.

Every diagnostic group should include specialists in every branch of medicine and surgery. In it should be an entero-proctologist, with training and experience sufficient to warrant the interpretation of his findings being considered of some value.

The Fellows of the American Proctologic Society have repeatedly urged the necessity for co-operation with the internist, surgeon, and other specialists. They have again and again pointed out that anal, rectal and colonic lesions often give rise reflexly to symptoms which may be wrongly attributed to disease in other parts of the body, and vice versa. This is especially true with regard to the reproductive and urinary organs of the male and female. Therefore, in the consideration of cases presenting symptoms in these parts, it is equally important to secure the opinions of the gynecologist, urologist, and proctologist before a correct and final diagnosis can be deduced.

It is the high-class men among the various specialists of medicine and surgery who best know the value of, and mostly insist upon the need for ano-recto-colonic examinations. They are the ones who best understand that through long and varied experience, skill in the use of the illuminated pneumatic sigmoidoscope, and ability to interpret correctly what is seen, the entero-proctologist is the one who should be relied upon to do this part in the diagnostic scheme.

The time has already arrived when even the laity recognize this, and they are now quick to take cognizance of the neglect of their medical adviser to secure for them an expert examination of the rectum and colon.

Every diagnostic group should include a competent proctologist. Only then will it be worthy of the name of "diagnostic group."

ADULT RECTAL PROLAPSE: TWO CASES AND A CONTRAST.

By Ralph W. Jackson, M.D., F.A.C.S., Fall River, Mass.

(Abstract.)

Too few papers have appeared from the pens of proctologists on the major types of rectal prolapse. The subject deserves more attention. Two sharply contrasting cases bring out the writer's views on the therapy. The first was operated four times; extensive regional cauterization resulting in recurrence; posterior rectopexy resulting in recurrence; amputation, resulting satisfactorily as regards anal prolapse, but leaving a very large posterior vaginal hernia, which was promptly cured by cul-de-sac closure with sigmoid-utero-ventral wall suspension. The second, and less favorable, case was promptly cured by one operation identical with the final operation in the first case. The pelvic floor as a support depends on the sufficiency of four factors. The pelvic fascia is variable in strength and attachments, varying the depth of the peritoneal cul-de-sac. The strength of the levators and their uplift is not a constant thing. The anal and vaginal orifices may be guarded by sphincters, peri-vulvar muscles, a perineum and levators which are imperfect through trauma or atrophy. An amount of adipose padding about these structures is essential, but often lacking. The rectum has imperfect support above the pelvic floor, and its anterior wall none at all. Prolapse begins here from external pressure, or begins below as anal protrusion, but eventually the prolapse contains a hernial cul-de-sac. Regional cauterization is inadequate to meet any such faults. Posterior rectopexy does not support the primarily offending part. Amputation removes the troublesome part, but does not correct the faulty factors, which may allow recurrence per anum or per vaginam. Cul-de-sac closure, though a difficult operation, goes far toward such correction, and suspension helps. The writer would summarize, that the operation of first choice for these very troublesome prolapses is cul-de-sac closure through the abdomen, plus some form of suspension, to be followed and supplemented, if need be, later, by amputation or perhaps some plastic work on the elements of the pelvic floor.

RELATION OF HEMORRHOIDAL DISEASE TO THE HEALTH BALANCE.

By William M. Beach, A.M., M.D., F.A.C.S., Pittsburgh, Pa.

(Abstract.)

In discussing the "Relation of Hemorrhoidal Disease to the Health Balance," Beach sums up as follows:

1. The deleterious effect upon the patient's mind by increasing his irritability, and making him anxious and morose.
2. The many reflexes coincident with ulcerated large or small type of hemorrhoids.
3. The influence upon the so-called vegetative functions of the body and intimate associations with diseases of the heart, lungs, liver and kidneys.
4. The refractory or retroactive relationship in most cases of constipation.
5. The tendency of neglected cases toward infections and cancer.

THE PRINCIPLES UNDERLYING THE CLAMP AND OPERATION FOR INTERNAL HEMORRHOIDS.

By W. Oakley Hermance, M.D., Philadelphia, Pa.

(Abstract.)

The author calls attention to the purpose of this form of operation.

First: To remove actual piles, or pathology.

Second: To support relaxed pile-bearing tissue and mucous membrane. After giving minute details as to his technic, he insists that only just *enough* tissue be removed to care for the pathology, being sure that columns of mucosa and skin be left betwen the eschars, thus preventing any undue contraction of the rectal outlet. Unless the tissue included in the clamp is excessive, it is not cut off, but is destroyed by the careful application of the cautery.

Care is taken that multiple strips of wet gauze are placed under the clamp to prevent undue radiation of heat to the surrounding tissues. Careful placing of the clamp, thorough cooking of the included tissue, combined with the crushing produced by the clamp, is depended upon to prevent such a complication as hemorrhage. After all danger of secondary hemorrhage has passed, the insertion of a gloved finger will overcome the tendency to contraction.

ORIGINAL RESEARCH WORK ON PRURITUS ANI.

By Dwight H. Murray, M.D., Syracuse, N. Y.

(Abstract.)

Dr. Murray read his seventh annual report on original research work in Pruritus Ani.

He said that he did not feel it necessary to continue to report the work in as great detail as in past years, because so many men in the profession, over such a wide area, were uniformly reporting a confirmation of his claims for the etiology being streptococcus fecalis.

He said that he is working with Parke, Davis and Company for the perfection of a standard stock vaccine that can be used by anyone without the trouble to make cultures. He has used some of this stock of polyvalent strain from eight successfully treated patients, and the patients on whom it was used seemed to improve. He has used it only one month, therefore full judgment must be suspended until it has had a longer trial.

During the past year he found the patients all getting worse at about the same time, and finally found that a laboratory worker had been deceiving him as to the strength and kind of vaccine; any kind of bacteria was used, and few, if any, streptococcus fecalis. The laboratory worker resigned shortly after this, and on getting the work in the hands of a proper man all went well again.

Dr. Murray reported that the work of the past year had still more strongly proven the correctness of the bacterial (streptococcus fecalis) infection theory as the etiology. His conclusions of the work are—

First: Conclusions of former years are confirmed, and most of them are strengthened by experience of the past year.

Second: The troubles I have had with the laboratory worker, as shown herein, give proof that the benefit received by patients, following the use of streptococcus fecalis vaccine, is not a coincident.

Third: Increasing proof that if rectal pathology is present with streptococcic infection of the anal skin, an operation will not cure the pruritus ani.

Fourth: Increasing proof that if rectal pathology is present without a streptococcus infection of the anal skin, an operation will cure the pruritus ani.

Fifth: Continued proof that there may be complicating infections of the anal skin, in pruritus ani, by staphylococcus or B. coli.

Sixth: Having published six years of research work, taking into account the report of physicians in this country and abroad who have confirmed his findings as to the skin infection, he feels justified in now claiming that the etiology of pruritus ani is a skin infection, and that the streptococcus fecalis is the usual bacterium.

ADENOMYOMA OF THE RECTUM.

By Frank C. Yeomans, M.D., F.A.C.S.,

Surgeon to the Central-Neurological and Workhouse Hospitals; Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York City.

(Abstract.)

The writer's interest in adenomyoma is due to the following case, which appears to be unique:

Mrs. V., French, aged 37, the mother of two healthy children, was seen in consultation in September, 1916, for rectal hemorrhage and pain. The important points of her history were: pulmonary tuberculosis (?) six years before, cured; menses painful, the flow diminishing; always constipated until three years ago. Then occurred attack of diarrhea lasting five months, and thereafter intermittent attacks. Past year ten to twelve movements daily, containing blood and mucus. Pain over sacrum is aggravated at menstrual period and with the diarrhea.

Physical Examination. Pale, but well-nourished woman, weighing 142 pounds. Wassermann of the blood, negative. Urine normal. Chest and abdomen negative.

Rectal Examination. Three and one-half inches up on anterior rectal wall, just above cervix uteri, finger feels a hard, fixed, fairly tender mass, the limits of which cannot be defined. Proctoscope shows a superficial ulceration, size of a quarter, at recto-sigmoidal juncture. This is red, clean, and bleeds freely on contact. Vaginal examination negative, except in posterior fornix was felt the same mass apparently the size of a guinea-hen's egg.

Operation. Sept. 26, 1917. Left rectus incision. No growths were found in liver or other abdominal viscera. The tumor was located in anterior wall of sigmoid just above its juncture with the rectum, and extended down two inches on rectum, cervix uteri and posterior vaginal wall. Lower third of sigmoid was mobilized, including small portion of posterior wall of uterus and its cervix, and superior hemorrhoidal artery was ligated. Then the abdominal wound was closed, and in lithotomy position the operation was completed by a typical Genu-Tuttle extirpation of the rectum, including the posterior vaginal fornix. Patient reacted promptly from the immediate shock of the operation. Bowels acted on third day, and union of sigmoid to peri-anal skin was primary except at one spot, which soon granulated. Patient left hospital in three and a half weeks, and is now well, having normal anal sensibility for bowel actions, which occur once or twice daily, with normal control. Vaginal and rectal examinations show no abnormalities.

Interest in this and similar tumors in this location centers in their

(*a*) *Origin.* Suggested origins are uterine mucosa, Wolffian ducts, and "embryonic rests persisting from the fusion of Müller's ducts." The author's case was clinically an intestinal growth. Dr. James Ewing, after careful study, reported, "the most likely origin is from superfluous material derived from that portion of the lower gut which continues on in the embryo to the bladder and allantois, and which normally atrophies. Persistence of a portion of this segment would furnish a source of smooth muscle and intestinal epithelium. I do not think the tumor is of Müllerian origin."

(*b*) *Symptoms.* Varying with the development and site of the growth, the symptoms would be: obstructive, dysenteric or neuralgic.

(*c*) *Diagnosis.* Tumor imparts a rather characteristic feel. Apt to be mistaken for infiltrating, inoperable malignant growth.

(*d*) *Prognosis.* Histologically it is benign. Clinically it may be malignant from the symptoms to which it gives rise, or actually undergo malignant change.

(*e*) *Treatment.* Surgical removal at the earliest date possible. The abdominal route is preferable, but if tumor is at recto-sigmoidal juncture a combined operation will probably be necessary for its removal, as was successfully done in the writer's case.

PELLAGRA, THE PELLAGROUS INTESTINE, AND PERICOLIC VEILS.

By John L. Jelks, M.D., Memphis, Tenn.

(Synopsis.)

Dr. John L. Jelks describes recto-colonic conditions in pellagra, gives his observations in pellagra, which he has contended for seven years is an infection, which begins in the intestine in a similar manner as does typhoid fever; and contends that in all active or acute cases of pellagra he finds pathology in the intestines commensurate with other symptoms.

The speaker describes the prodromal and the late symptoms, and both the early and late pathology observed by him. The speaker describes the intra-abdominal, as well as also the gut pathology, in the different stages.

The speaker says pellagra seldom develops in sanitary and screened homes, and believes that sanitation, isolation, and the elimination of raw vegetables as a diet, and effectual screening, will control pellagra. He refers to the fact that the negroes and poor whites in his section have more money, and more to eat and a greater variety of diet than they ever had, yet that pellagra is increasing rapidly in the outlying districts about Memphis, though it seldom extends over into the sewered and screened section of the city proper. The speaker referred to a recent ordinance that had passed in the city of Memphis, requiring doctors to report all cases of pellagra, and to exercise the same precautionary measures in these as in cases of typhoid fever.

NEO-PROCTOLOGY: A GLIMPSE INTO THE FUTURE.

By Jerome Morley Lynch, M.D., F.A.C.S., New York City.

(Abstract.)

We cannot claim for proctology that it is a new field of effort. It was practised centuries ago. In early records are described the cutting of a fistula and the ligature operation for hemorrhoids. While, therefore, technic offers no novelties, physiologic surgery affords a most promising field for the further development of proctology.

The observations of the ancients were remarkably accurate, and, considering the limited amount of detailed knowledge at their command, are as wonderful examples of the power of human induction as many of the best conclusions of the modern day. Consider, for example, their decision that a hemorrhoidal flux was in some cases to be regarded as beneficent. Whether or not the cause was known as we understand it today, to be hepatic cirrhosis or right heart engorgement, still, for all, the observation is based upon as sound philosophy as could possibly be adduced today.

It is well for us, in the occasional mental stock-taking (which is periodically forced upon us) to bear in mind that the tendency of modern scientific instruments of precision, together with all the wonderful array of laboratory tests, while of indisputable value, are, in a certain sense, of greater value to the patient than to the physician, for they certainly tend to take from the latter the necessity for that keenness of perception and correlative interpretation of symptoms, which was the distinguishing characteristic of the earlier physicians, whose chief reliance was their own mental activity.

REPORT OF A CASE OF IDIOSYNCRASY TO QUININE AND UREA HYDROCHLORIDE.

By Collier F. Martin, M.D., Philadelphia, Pa.

(Abstract.)

Martin reports a case of toxic symptoms appearing in a patient from an injection of 3 m. of a 10% solution of quinine and urea hydrochloride. The symptoms complained of by the patient were swelling of the hands and feet, and numbness of the extremities. For a few hours there was some difficulty in respiration, associated with a tendency to fainting and some nervous perturbation. Later there developed an urticarial rash, covering the entire body, associated with intense itching. The attack subsided in about two days, leaving the patient with no alarming symptoms. The patient has had two previous experiences, and certainly should have informed her physician of her susceptibility. The case is cited simply to note one of the complications which may occur when using this drug.

THE NON-SURGICAL TREATMENT OF SPLANCHNOPTOSIS.

By Rolla Camden, M.D., Parkersburg, W. Va.

(Abstract.)

Without going deeply into the etiology, pathology, and symptoms and diagnosis of splanchnoptosis, attention is called to the necessity for treatment first along conservative lines of medicinal, personal and mechanical aids in this condition, rather than the surgical treatment usually offered.

Normally, the viscera are held in place by their respective supports, and intra-abdominal pressure, these being aided by proper poise of the body.

In splanchnoptosis the poise is bad, with the resulting loss of intra-abdominal pressure and of supporting visceral attachments.

Splanchnoptosis, divided into simple and complex: simple when there are no restraining adhesions and the organs are returnable to their normal positions; complex (extravisceral), when they are retained out of place by adhesions, and are not, therefore, returnable to their normal places.

Our endeavor should be to restore viscera to their normal places and maintain them there. This is to be accomplished by personal efforts of the patient by correction of posture, certain abdominal exercises, massage, vibration, and hydrotherapy, and medical treatment as indicated after gastric and enteric analyses.

Other means are external or mechanical, such as shoulder braces, abdominal supports, corsets, etc., *modified to suit the patient* and raising foot of the bed.

Attention is called to the difficulty of obtaining proper and constant support to thin individuals with small abdomens and prominent hip-bones, with suggestions for modifying the usual mechanical aids offered.

NEGLECTED RECTAL EXAMINATIONS.

By James A. McVeigh, M.D., Detroit, Mich.

(Abstract.)

A thorough rectal examination is a source of comfort to the patient and satisfaction to the doctor. It enables the latter to make a correct diagnosis and advise proper treatment.

Rectal examinations are not difficult, and should be ocular, digital, and instrumental. The physician should never accept the patient's diagnosis. This is not infrequently done, and such an unscientific procedure is usually productive of unsatisfactory result.

Indifference and carelessness on the part of members of the medical profession in conducting rectal examinations are being rapidly lessened, owing largely to the influence of the American Proctologic Society. The remedy lies in persistently reminding the men engaged in general practice of the necessity of making thorough rectal examinations whenever indicated, and the men who are following this special line of work are the ones who must be most active in conducting this campaign of education.

Book Reviews.

The Healthy Girl. By Mrs. Joseph Cunning, M.B., Lond., and A. Campbell, B.A. London: Henry Frowde and Hodder and Stoughton.

This volume is intended as a manual of personal hygiene for school girls, and is well written, at once from the scientific and popular standpoint. It is divided into a series of chapters dealing with various bodily functions, and is illustrated by a series of twenty-one text cuts. It should be a useful guide to place in the hands of girls at the proper age.

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126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

THE MAN WHO STAYED AT HOME.

A recent popular melodrama which has met with well-deserved success at a local theatre describes the difficulties of a certain man whose duties demanded that he stay at home and assume the rôle of a slacker in order to do his share for his country. His position was a difficult and at times a painful one. He was misunderstood and abused. We all welcomed the last act which showed this man in his true light and made him the hero of the play.

A situation somewhat analogous to this exists in the medical profession of this country at the present time. A large number of physicians have been fortunate enough, and we use the term "fortunate" advisedly, to come within the draft age or to have already joined the Medical Reserve Corps or to be so situated that they have been able to offer their services to the Army and Navy or elsewhere. We have each of us attended functions to honor these men on their departure to France to represent us in this great war. We have sung and laughed and presented gifts on such occasions, while each of us has sincerely envied our more fortunate brothers in uniform. While neither our friends overseas, who apparently are enjoying their hard work and new, though perhaps rough, experiences, nor we who stay at home with increasing burdens medical and financial, and decreasing supplies of sugar and coal, need any sympathy, there is a certain group of physicians who do need sympathy and encouragement. We refer to the superintendents and physicians of the sanatoria for consumptives, institutions for the insane and others in Massachusetts. The life of these men is, at the best, none too pleasant. They and their families live in an atmosphere of ill health and disease—physical or mental. The compensation they receive is inadequate, to say the least. They are only too often harassed and badgered by legislative committees, commissions to investigate and report, and so-called bureaus of efficiency and economy, whose knowledge of the conditions they so freely criticize is far too often a superficial and inadequate one. These men have lost many of their best and most efficient assistants and helpers, who have entered the Army or who have accepted more remunerative and pleasanter situations elsewhere. In the Massachusetts sanatoria for tuberculosis we are glad to note that, despite the pressure brought to bear, none of the superintendents has handed in his resignation. The same may be said of the State institutions for the insane, and in fact practically all of our State institutions. At some of our largest State asylums, normally having a staff of ten to twelve physicians, there are only three or four physicians left to do the work. In addition to this extra work thrown upon their shoulders by the decreased force at the institutions themselves, many of these men are serving on committees for reconstruction work and other war activities. The work that these men are doing in keeping these institutions up to the highest possible standard is exactly as important as the work of their more fortunate brothers overseas. It is absolutely essential that our campaign against consumption, for instance, should be continued at the very highest possible efficiency, so that when the time comes we can make provision and have the adequate machinery in operation and running smoothly to care for tuberculous soldiers from overseas.

This is the work that these superintendents are doing. They have stuck by their posts. They have assumed increasing burdens, and are cheerfully and quietly doing the duty that lies nearest to them, and are doing it well. They do not wear uniforms, nor do they seek nor receive recognition. They are the men who are staying at home, as did the man in the play. Let us hope that, sooner or later, the important service that they are doing for their country will receive the recognition it deserves.

* * *

WAR-RISK INSURANCE.

In recent previous issues of the Journal we have commented editorially from time to time on the Government plan of war-risk insurance. There has been some uncertainty in this connection with reference to the question whether such insurance was intended to cover partial as well as total disability. The following letter from Colonel Straub to Dr. George W. Gay of this city, would seem to clear up the matter and settle it finally.

"Headquarters Northeastern Department,
Department Surgeon's Office,
25 Huntington Avenue, Boston.
February 4, 1918.

My dear Dr. Gay:

In the letter regarding insurance that I sent you on January 24, there seemed to be a discrepancy between the information that I gave you, and that which you had received from the Deputy Commissioner of Customs. This discrepancy is to be explained as follows:

Insurance of two sorts is provided by the United States Government for its soldiers who die or who are disabled. One kind of insurance is called 'compensation,' and practically replaces the former pension system; the other sort is called 'war-risk insurance.'

This 'compensation' is payable to the beneficiary, for the death of the soldier, or to the soldier for partial or total disability; it is automatic in its operation, since the soldier receives the benefits of compensation, without action on his part. This was the type of insurance for partial disability that I referred to in my letter of January 24 to you.

The war-risk type of insurance is taken out by the soldier himself for such amount as he chooses up to $10,000. The opportunity to apply for this form of insurance expires within 120 days of entry into active service. This 'voluntary' insurance is payable only for death or total disability.

The two types of insurance described above—one automatic, and called 'compensation,' and one voluntary—are entirely distinct, separate, and supplementary to each other. That is, the monthly payment under the 'compensation' to the soldier who is permanently disabled, is in addition to any payment which he may or may not have provided for himself by taking out voluntary war-risk insurance.

P. T. Straub,
Colonel, Medical Corps, U. S. A."

* * *

PNEUMONIA.

At a time when pneumonia is the chief cause of death in our armies at home and in the field, and when it is also particularly prevalent among our civil population, there is peculiar timeliness in the two leading articles of this week's issue of the Journal. The paper by Dr. Shattuck and Dr. Lawrence summarizes the experience of the Massachusetts General Hospital in the treatment of this disease during the period from 1889 to 1917, and is a sequel to a similar paper by Drs. Coolidge and Townsend, published in 1889 and abstracted in the Journal of June 27, 1889 (Vol. cxx, p. 643). Dr. Leen's paper is a study of strains of pneumococci, and of the serological treatment appropriate to different strains. The attention of physicians is directed to these two articles and to the progress which they connote in the knowledge and treatment of pneumonia.

* * *

MEDICAL NOTES.

WAR NOTES.

Death Rate in Germany.—The *Maasbode,* an Amsterdam daily, publishes a report of death rates in Germany from its Berlin correspondent. From the beginning of the war up to the end of 1916 there were over a million more deaths in Germany than is normally the case.

"For the first three years, the entire loss by mortality is said to have been 3,700,000. Thus instead of the normal increase of 2,400,000 there was on August 1, 1917, a decrease of 600,000 to which another 700,000 was added as a result of the decline in birth figures that still continues. The absolute decrease in the population after three years, therefore, would have been 2% of the number at the beginning of the war.

Other phenomena are to be expected for the near future. Instead of 14,000,000 the men between the ages of 17 and 45 will number only 12,700,000; and instead of 800,000, as now, the excess of women over men will be 2,100,000. It is not yet known how the war losses will be spread over the various ages, but it looks as if there will be 1100 women to every 1000 men of marriageable age. For these reasons, and in view of the fact that there will be a large number of invalids among the men, the marriage chances must be termed greatly reduced,—a fact which will in its turn produce further shiftings on the labor market, that on their part will again react on the population movement.

The war is not regarded—at any rate by experts—as harmful to infants. Natural feeding is far more general than formerly in all classes of population, and the results are good, as the food authorities apportion to the mother the food for the child, as, for example, 1 litre of milk per day. Infants have a right to 1 litre of milk daily, 50 grammes of sugar, and 200 grammes of flour a week and 1 pound of oatmeal a month, and can do well on that.

The food question becomes more difficult in the child's second year, as vegetables and fruits are scarce, at any rate in the large towns, so that the potato has to take the place of these. The counsel is now heard more frequently to restrict gymnastic exercises and, following the example of the marmots, to substitute the food that is lacking by sleep, and to see that the children get long nights of sleep."

War Relief Funds.—Following a period of relative recent inactivity, the sponsors of the New England Belgian Relief Fund have issued a new appeal for funds to continue the work of relieving destitution among Belgians, wheresoever dispersed. This work will continue in charge of Mr. Hoover. In issuing this fourth annual appeal Mr. John S. Codman, manager of the fund, points out that changed conditions regarding shipping give opportunity for larger shipments to the Belgians, and submits the following summary of the fund's financial operations from October, 1914, to December, 1917, inclusive (three years and three months):

RECEIPTS.		
Contributions		$660,112.31
Interest		2,946.03
Total		$663,058.34
DISBURSEMENTS.		
Expended for relief—		
Food and clothing	$343,805.16	
Cash distribution	246,167.95	
		$589,973.11
Expense of collection and administration of funds		37,293.09
Cash in hands of treasurer, Jan. 1, 1918	$27,768.10	
Advanced to headquarters and covered by assets there (see note)	8,024.04	
		35,792.14
Total		$663,058.34

Note—Assets at headquarters on Jan. 1, 1918, as listed by the auditors, were as follows:

Cash on hand	$8,132.14
Inventory	9,280.30
Equipment	400.00
Accounts receivable	1,640.45
Insurance unexpired	49.87
	$19,502.76
Accounts payable	1,525.94
	$17,976.82

The New England Belgian Relief Fund, unlike many other relief organizations, has no special fund contributed to cover the necessary expenses of collection and administration. The figures above include all cash contributions and all disbursements for expense, such as advertising and other publicity, and managerial and clerical expense connected with the collection of money and its expenditure for relief purposes. It will be noted that the total expense is $37,293.09, as compared with total receipts amounting to $663,058.34, or less than six cents out of every dollar contributed.

On February 7, the totals of the principal New England War Relief Funds reached the following amounts:

Belgian Fund	$638,468.14
Armenian-Syrian Fund	278,875.37
Polish Fund	96,387.73

Health Conditions at Army Camps.—The Surgeon-General reports that for the week ended February 1 that there is a slight decrease in deaths from pneumonia. The total number of deaths was 178, pneumonia being responsible for 117 of these. The Regular Army, as usual, had the lowest death rate, with 29. There were 69 deaths in the National Guard and 87 in the National Army.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending Feb. 9, 1918, the number of deaths reported was 312, against 290 last year, with a rate of 20.78, against 19.58 last year. There were 43 deaths under one year of age, against 42 last year.

The number of cases of principal reportable diseases were: diphtheria, 92; scarlet fever, 56; measles, 125; whooping cough, 62; typhoid fever, 2; tuberculosis, 54.

Included in the above were the following cases of non-residents: diphtheria, 12; scarlet fever, 9; measles, 2; tuberculosis, 5.

Total deaths from these diseases were: diphtheria, 6; scarlet fever, 2; measles, 1; whooping cough, 5; typhoid fever, 1; tuberculosis, 23.

Included in the above were the following non-residents: diphtheria, 4; measles, 1; tuberculosis, 2.

Appointment of Dr. McBain.—Dr. William H. McBain of Malden has been appointed city bacteriologist and physician in charge of the Malden contagious hospital. He succeeds Dr. C. H. Staples, who has resigned.

Resignation of Dr. Allan McLaughlin.—Dr. Allan J. McLaughlin, health commissioner of Massachusetts, has been recalled to Washington by federal authorities. He will become assistant surgeon-general in the public health service of the United States. As second in command he will have control of all the domestic health work in the United States, particularly with respect to the military cantonment areas. An appreciation of Dr. McLaughlin's work since he has been in this state appears in the daily press.

"Those who follow the cause of public health and sanitation in Massachusetts will regret to learn that our State commissioner of health, Dr. McLaughlin, has tendered to Governor McCall his resignation. Four years ago the State House was the scene of legislative turmoil over a proposed reorganization of the State Board of Health, which for more than a quarter of a century had faithfully served the State and won for it the highest place among all similar boards in America. Much ignorant and ill-timed criticism found vent, and eventually a new form of organization was enacted similar to one which had recently been successfully inaugurated in the State of New York. A Department of Health took the place of the old unpaid Board, headed by a paid commissioner and a Public Health Council. With commendable painstaking and wisdom Governor Walsh chose for the new and trying position Dr. Allan J. McLaughlin of the United States Public Health Service, who had won his spurs by service in the Philippines, in Europe and in America.

From the outset Dr. McLaughlin showed great sagacity and a fine appreciation of the Massachusetts spirit. He surrounded himself by a council of sanitary leaders wisely selected, to whose opinions and advice he has always been ready to listen. He retained as the heads of such departments as sanitary engineering, food and drug inspection and chemistry the experienced workers of the old board. He has never played politics. He has inaugurated new methods of appointment of district health officers, new methods of dealing with old diseases, new methods of public health education. In short, he has kept the standard high and has maintained the best traditions of State service to the public health, for which Massachusetts has long been famous. And now he returns to the United States Public Health Service, by which he had only been lent to Massachusetts, in answer to an imperative call to duty at the office of that service in Washington. The care of the civilian population is second only in importance to that of the Army and Navy, and war conditions have put so many new and heavy burdens on the Federal Public Health Service that its surgeon-general has summoned Dr. McLaughlin to his immediate personal staff for active duty. He will take with him the respect and gratitude of the people of Massachusetts for his faithful and honorable service to the Commonwealth. His resignation also lays upon the governor a heavy burden in the choice of a worthy successor."

The Norfolk District Medical Society.—A regular meeting of the Society will be held at the Homeopathic Hospital, Evans Memorial Building, 80 E. Concord Street, Tuesday, Feb. 26, at 7 p.m. sharp. The program is as follows: Inspection of the hospital; Business; Communications; "The Venereal Problem—The State Department of Health Viewpoint," M. E. Champion, M.D., State Dept. of Health; "The Venereal Problem—The Army Viewpoint," Lieut. E. M. McKee, S.C.N.A.; "The Venereal Problem—The Navy Viewpoint," Lieut. H. P. Stevens, M.D., U.S.N.R.

The Massachusetts Medical Society.

STATED MEETING OF THE COUNCIL.

A stated meeting of the Council of the Massachusetts Medical Society was held in John Ware Hall, Boston Medical Library, Wednesday, February 6, 1918, at 12 o'clock, noon. The President, Dr. Samuel B. Woodward, was in the chair and the following 67 Councilors present:

Barnstable,
  C. W. Milliken.
Bristol South,
  E. F. Curry.
Essex North,
  T. R. Healy.
  R. V. Baketel.
  E. H. Noyes.
  J. J. O'Sullivan.
Essex South,
  R. E. Bicknell.
  H. K. Foster.
Hampden,
  E. P. Bagg, Jr.
  R. A. Greene.
  E. A Knowlton.
Middlesex East,
  E. S. Jack.
Middlesex North,
  W. B. Jackson.
  E. G. Livingston.
  M. A. Tighe.
Middlesex South,
  H. T. Baldwin.
  F. E. Bateman.
  E. H. Bigelow.
  C. H. Cook.
  A. W. Dudley.
  Edward Mellus.
  C. E. Mongan.
  E. H. Stevens.
  F. R. Stubbs.
  Julia Tolman.
  G. W. Whiting.
  Alfred Worcester.
  J. H. Young.
Norfolk,
  E. H. Brigham.
  H. W. Dana.
  C. B. Faunce.
  T. F. Greene.
  R. W. Hastings.
  Bradford Kent.
  T. J. Murphy.
  J. W. Pratt.
  S. H. Rubin.
  Victor Safford.
  R. D. Schmidt.
  H. F. R. Watts.
Plymouth,
  Gilman Osgood.
  A. E. Paine.
Suffolk,
  H. F. Vickery.
  E. S. Boland.
  G. W. W. Brewster.
  W. L. Burrage.
  E. A. Codman.
  J. A. Cogan.
  F. J. Cotton.
  G. A. Craigin.
  E. G. Cutler.
  R. L. DeNormandie.
  Albert Ehrenfried.
  C. M. Green.
  J. L. Morse.
  Anna G. Richardson.
  G. G. Smith.
  R. M. Smith.
  A. K. Stone.
  F. B. Talbot.
  D. H. Walker.
Worcester,
  R. W. Greene.
  David Harrower.
  A. G. Hurd.
  G. O. Ward.
  S. B. Woodward.
Worcester North,
  J. G. Henry.

The records of the last meeting were read and accepted.

Dr. Charles M. Green presented the following report of the Committee on Membership and Finance as regards membership, and it was accepted and its recommendations adopted.

Report of the Committee on Membership and Finance as to Membership.

The Committee on Membership and Finance makes the following recommendations as to membership:

1. That the following named Fellows be allowed to retire, under the provisions of Chapter I, Section 5, of the by-laws:

Jesse Howes Averill, of Campello, Brockton.
Joseph Ward Battershall, of Attleborough.
John Shanahan, of Peabody, with remission of dues to the amount of $10.
Samuel Finley Smith, of Indian Orchard, Springfield.

2. That the following named Fellows be allowed to resign, under the provisions of Chapter 1, Section 7, of the by-laws:

Francis Gilman Blake, of Minneapolis.
Herbert Rutherford Brown, of Rochester, N. Y., with remission of dues to the amount of $5.
William Sohier Bryant, of New York.
Herbert Huskisson Cornforth, of Fitchburg.
Henning Vitalis Hendricks, of Traverse City, Michigan.
Nellie Louise Lawrence, of Louisville, Kentucky
John Alfred Parsons Millet, of Buffalo, N. Y., with remission of dues to the amount of $5.
Isaiah Lovell Pickard, of Concord Junction, with remission of dues to the amount of $5.

3. That the following named Fellows be allowed to change their district membership, without change of legal residence, under the provisions of Chapter III, Section 3, of the by-laws:

Carleton Eugene Allard, from Suffolk to Norfolk.
Louis Adalore Oliver Goddu, from Norfolk to Suffolk.
Robert Battey Greenough, from Norfolk to Suffolk.

For the Committee on Membership and Finance,
Charles M. Green, *Chairman.*

The petition of W. J. Brickley to be restored to the privileges of fellowship was acted on favorably. As a Committee to consider the petition of J. T. L. Brennan for restoration to the privileges of fellowship, the Chair nominated and the Council appointed: Leonard Huntress, J. B. O'Connor, J. P. McAdams; and for a similar petition from J. E. Clark: E. L. Young, Jr., J. D. Barney, E. R. Kelley.

On nomination by the President the Council appointed the following delegates:

To House of Delegates American Medical Association, for two years from June 1.

Principals: J. B. Blake, H. G. Stetson, L. F. Woodward.
Alternates: G. Osgood, L. A. Jones, J. F. Burnham.

To Annual Meetings of state medical societies:

Maine: C. W. Harlow, D. C. Dennett.
New Hampshire: D. N. Blakely, A. A. Taft.
Connecticut: C. L. Scudder, E. A. Bates.
Rhode Island: D. Harrower, J. H. Davenport.

The Treasurer read his report for the year 1917. Dr. Ray W. Greene read the report of the Auditor, including a letter of the certified public accountant. *Voted,* To accept the reports as read.

Dr. Charles M. Green, for the Committee on Membership and Finance, presented a budget and two motions. He explained that the Society had no longer a balance in the treasury; that foreseeing that there might be a deficit, his Committee had recommended a year ago that ten thousand dollars of the balance be placed in the permanent fund, and that by the action of the Council, five thousand dollars of this had been so invested; that for the previous year the excess of expenditure over the budget had been about twenty-seven hundred dollars. He urged the Society to live within its income, and the Committee had submitted a budget which he thought would accomplish that purpose. He pointed out there were three alternatives as to the disposal of the balance of twenty-five hundred dollars in the treasury: that (*a*) it should remain in the treasury; (*b*) be a dividend to district societies, or (*c*) be used for the annual dinner. On motion by Dr. Bateman the budget was accepted by vote.

Dr. Bateman submitted the Committee's motion, No. 1, amended by adding the following words at the end, "if requested." Motion: "That members of the Massachusetts Medical Society in active military or naval service of the United States Government, or of its allies, be exempted from the payment of annual assessments during the present war." The amendment was lost and the original motion was passed.

The questions of having an annual dinner and of how the annual dues should be remitted were discussed by Dr. Ward, Dr. Jack, Dr. Worcester, Dr. Bateman, Dr. Stone, and Dr. Green. Dr. Bateman *Moved,* That the dues that have already been paid for the current year be returned on request. This motion appeared to be lost by a voice vote, but when the vote was doubted, it was carried by a standing vote of 34 in favor and 15 opposed. On motion by Dr. Ward, it was *Voted,* That $2500 be distributed *pro rata* to the district societies as a dividend, as in previous years, the annual dinner being omitted in 1918. By a standing vote, 33 were in favor and 19 opposed, and the motion was carried.

Dr. Green presented motion No. 2: "That the several district societies be urged to take measures to provide money wherewith to pay to the Massachusetts Medical Sociey the remitted dues of their members in active military or naval service, to the end that the activities of the Society may not be seriously curtailed," and it was passed unanimously.

Dr. J. H. Young for the Committee of Arrangements said that his Committee had prepared a tentative program for the annual meeting, but that in view of the votes of the Council, just passed, he would not read it, but he would like to have the day of the meeting definitely determined. On motion by Dr. J. L. Morse it was voted that the meeting be held on June 18 and 19. Dr. Mellus moved that the Committee of Arrangements be requested to arrange for a dinner to be paid for by those who attended it, and Dr. Stevens suggested that a postal card vote would show the number of Fellows who would attend such a dinner. The motion being put, was lost.

On nomination by the President, Drs. E. H. Stevens of Cambridge and A. R. Crandell of Taunton were elected to fill vacancies in the Committee on State and National Legislation caused by the resignations of Drs. W. H. Robey and J. S. Stone. The President read obituaries of ex-President Silas Dean Presbrey and Councilor John Quincy Adams.

The President spoke of the work being done by the State Department of Health to protect the community from venereal diseases. He said that the Department now has a bill before the Legislature for the establishments of clinics in venereal diseases, and asking for an appropriation of $15,000. The Department now feels that it needs $10,000 more in order to establish properly these clinics, and it would ble glad to have the support of the Massachusetts Medical Society in furthering the bill before the Legislature. The President asked for the privileges of the floor for Dr. C. Morton Smith, and they were so voted. Dr. Smith said that the attitude of the public and of the profession toward venereal diseases had changed in recent times. At this time the profession should act in unison to favor a propaganda for the further abatement of venereal diseases. The State Department of Health has formulated a program of: (*a*) venereal disease reporting; (*b*) extension of facilities for making diagnosis and early treatment; (*c*) repressive measures; (*d*) education of the laity, especially young adults, as to what they should know. He thought a committee could be formed to work with the State Department of Health in the furtherance of these objects, and he moved that a committee of five be appointed by the President to consider the question of the prevention and cure of venereal diseases, and it was so voted. The President appointed this committee: Drs. C. Morton Smith, Paul Thorndike, F. H. Baker, W. C. Quinby, and Nelson C. Haskell.

Dr. A. K. Stone read the following report of progress of the Committee on Health Insurance, and asked for an appropriation of $100 for this Committee:

The Committee on Health Insurance has attended hearings and has caused to be made stenographic notes, many of which have been published in The Boston Medical and Surgical Journal, showing the general temper of the hearings. The Massachusetts Commission on Social Insurance reported to the Legislature against social insurance and in favor of the extension of health work in the State. The Committee had hoped to be discharged, but House Bill 642 has been introduced and the Committee will have to remain active until the June meeting of the Society. All are notified that the hearing on this bill on Industrial Insurance will be held February 27, at 7 p.m.

The report was accepted, and the request was referred to the Committee on Membership and Finance, which receives, under the By-Laws, all requests for extraordinary appropriations.

Dr. Mongan presented the following preamble and resolution, and it was passed:

"*Whereas,* Recognizing the important rôle that food will play in winning the war for the Allies, and appreciating the greatness of the task which the Food Administration has assumed,

"*Be It Resolved,* That we, the Council of the Massachusetts Medical Society, most urgently appeal to the members of our society to use every effort as a society and individually to bring home to the people of Massachusetts the grave necessity of conserving food."

Adjourned at 1.52 p.m.

Walter L. Burrage,
Secretary.

TREASURER'S REPORT.

Statement Showing the Assets and Liabilities of the Massachusetts Medical Society December 31, 1917.

Schedule A

ASSETS.

Cash		
New England Trust Co.	$1,054.14	
Old Colony Trust Co.	3,140.14	$4,194.28
Investments		
Shattuck Fund		
Annuity Policy Mass. Hosp. Life Ins. Co.	9,166.87	
Phillips Fund		
Mass. 3½% Gold Bonds	10,000.00	
Cotting Fund		
Deposit in Institution for Savings in Roxbury and Vicinity	1,000.00	
Deposit in Provident Institution for Savings in the Town of Boston	1,000.00	
Deposit in Suffolk Savings Bank for Seamen and Others, Boston	1,000.00	
Fund for Professorship of Military Medicine		
Liberty Bonds—Second Issue 4%	300.00	
Permanent Fund		
Annuity Policy of Mass. Hosp. Life Ins. Co.	11,253.30	
Mass. 3½% Gold Bonds	6,000.00	
Deposit in Franklin Savings Bank of the City of Boston	1,074.48	
Liberty Bonds—First Issue 3½%	5,000.00	$45,794.65
Total		$49,988.93

LIABILITIES.

Endowment Funds		
Shattuck Fund (G. C. Shattuck. 1854. Balance, 1866)	$9,166.87	
Phillips Fund (Jonathan Phillips, 1860)	10,000.00	
Cotting Fund (B. E. Cotting, $1000, 1876, 1881, 1887.)	3,000.00	
Emmons and Associates Fund	589.71	
Fund for Professorship of Military Medicine	300.00	$23,056.58
Surplus		
Balance January 1, 1917	23,204.58	
Deficit for the year *Schedule B*	3,727.77	26.932.35
Total		$49,988.93

Statement Showing the Profit and Loss Account of the Massachusetts Medical Society for the Year Ending December 31, 1917.

Schedule B

CREDIT.

Dues paid to District Treasurers		
Barnstable	$155.00	
Berkshire	380.00	
Bristol North	315.00	
Bristol South	695.00	
Essex North	820.00	
Essex South	1,035.00	
Franklin	185.00	
Hampden	1,160.00	
Hampshire	295.00	
Middlesex East	340.00	
Middlesex North	559.00	
Middlesex South	2,260.00	
Norfolk	2,504.00	
Norfolk South	285.00	
Plymouth	495.00	
Suffolk	3,355.00	
Worcester	1,325.00	
Worcester North	430.00	$16,593.00
Dues paid to Treasurer		819.00
Dinner tickets		687.00
Income Shattuck Fund (Income not collected)		
Income Phillips Fund		
Massachusetts 3% Bonds		350.00
Income Cotting Fund		
Interest Institution for Savings in Roxbury and Vicinity (not collected)		
Interest Provident Institution for Savings (not collected)		
Interest Suffolk Savings Bank (not collected)		
Carried forward		$18,449.00

Brought forward		$18,449.00
Income Permanent Fund		
Annuity policy Mass. Hosp. Life Ins. Co. (not collected)		
Massachusetts 3½% Bonds	$210.00	
Interest Franklin Savings Bank (not collected)		
Liberty Bonds 3½% First Issue	88.47	298.47
Emmons and Associates Fund		
Donations for salary and expenses of Society's agent		1,373.21
Homeopathic Medical Society		
Donation for Workmen's Compensation Committee		200.00
Income from Deposit in Banks		
New England Trust Co.	171.20	
Old Colony Trust Co.	131.31	302.51
Total		$20,623.19

DEBIT.

General Expense			
President's expense	$115.76		
Secretary's expense	445.70		
Treasurer's expense	150.50		
Librarian's expense	64.23		
District Treasurer's expense	1,329.74		
Supervisors' expense	29.38		
Censors' expense	313.50		
Rent	750.00		
Salaries	1,605.00		
Delegates' expense	27.12	$4,830.93	
Boston Medical and Surgical Journal			
Guarantee	9,479.25		
Editor's salary	300.00		
Total	9,779.25		
Less rebate for the year 1916	500.00	9,279.25	
Committee expense			
Arrangements	2,900.53		
Membership and Finance	4.95		
Ethics and Discipline	5.64		
State and National Legislation	118.41		
Public Health	174.33		
Workmen's Compensation	1,793.99		
Health Insurance	127.72	5,125.57	
Annual Dividend to District Societies		2,500.00	
Defence of malpractice suits		1,107.65	
Cotting Fund		134.35	
Emmons and Associates Fund			
Salary and expense of Society's agent		1,373.21	$24,350.96
Deficit for the year			$3,727.77

Arthur K. Stone,
Treasurer.

AUDITOR'S REPORT.

In the absence of my auditor colleague, Dr. Ayer, I have made an examination of the books of the Treasurer of the Massachusetts Medical Society, with the aid of a certified public accountant who reports as follows:

Boston, February 1, 1918.

Dr. R. W. Greene,
Auditor, Massachusetts Medical Society,
21 West St., Worcester, Mass.

Dear sir:—

In accordance with your instructions I have audited the books and accounts of the Massachusetts Medical Society for the year ending December 31, 1917, and enclose herewith

Schedule A Statement Showing the Assets and Liabilities of the Massachusetts Medical Society, December 31, 1917.

Schedule B Statement Showing the Profit and Loss Account of the Massachusetts Medical Society for the year ending December 31, 1917.

The cash on deposit in the banks has been reconciled with the bank accounts and found to be correct. The disbursements have been properly verified, and all known cash receipts during the year have been properly credited on the books.

Income from the Shattuck Fund, invested in an annuity policy in the Massachusetts Hospital Life Insurance Company, income from the Cotting Fund, deposited in the Institution for Savings in Roxbury and Vicinity and the Suffolk Savings Bank for Seamen and Others, and income from the Permanent Fund, invested in an annuity policy in the Massachusetts Hospital Life Insurance Company, and deposited in the Franklin Savings Bank of the City of Boston, were not received until after January 1, 1918, and will be treated as income for the year 1918.

I have not examined any of the securities belonging to the Society.

Yours very truly,
Horace C. Hartshorn,
Certified Public Accountant.

On January 31st, 1918, I personally examined the securities belonging to the Society and found them all, as listed on the books of the Treasurer, in a safe deposit box of the Old Colony Trust Co.

Respectfully submitted,
Worcester, Feb. 6, 1918. Ray W. Greene, *Auditor.*

BUDGET.

The Committee on Membership and Finance submits and recommends the adoption of the following budget for the fiscal year 1918:

Income		
Estimate of the Treasurer		$18,745
Appropriations		
Salaries of officers:		
Secretary	$800	
Treasurer	500	
Librarian	400	
Editor	300	
Official expenses of officers:		
President	100	
Secretary	600	
Treasurer	140	
Librarian	60	
District Treasurers	1,200	
Censors	320	
Supervisors	30	
Delegates to meeting of A. M. A.	100	
Rent of accommodations at the Medical Library	750	
Boston Medical and Surgical Journal (appropriated in October)	9,000	
Defense of malpractice suits	600	
Shattuck Lecture	200	
Cotting Lunches	200	
Standing Committees:		
Committee of Arrangements (annual meeting)	500	
Membership and Finance	5	
Ethics and Discipline	25	
Medical Education and Medical Diplomas	25	
State and National Legislation	250	
Public Health	75	
Contingent expenses	65	
		16,245
Balance { to remain in treasury, or for dividend to District Societies or for annual dinner		2,500
		$18,745

The Committee recommends the passage of the following motions:

1. That members of the Massachusetts Medical Society in active military or naval service of the United States Government, or of its Allies, be exempted from the payment of annual assessments during the present war.

2. That the several District Societies be urged to take measures to provide money wherewith to pay the Massachusetts Medical Society the remitted dues of their members in active military or naval service, to the end that the activities of the Society may not be seriously curtailed.

For the Committee on Membership and Finance,

Charles M. Green, *Chairman.*

Obituary.

WILLIAM HENRY LATHROP, M.D.

Dr. William Henry Lathrop died at his home in Lowell, December 22, 1917, at the age of 77. He was a graduate of the University of Pennsylvania medical department, in the class of 1865, having served previously as acting assistant surgeon in the United States Army. He became editor of the *Detroit Review of Medicine and Pharmacy* the year of his graduation and held the position until 1873; then he served three years as physician to the Detroit Retreat for the Insane, moving to Lowell in 1876 and joining the Massachusetts Medical Society From 1892 to 1900, he was a member of the Lowell School Board.

CHARLES DEXTER SAWIN, M.D.

Dr. Charles Dexter Sawin of Winter Hill, Somerville, died at the Relief Hospital, Boston, February 8, 1918.

Dr. Sawin was born in Charlestown, June 10, 1857, graduated S.B. from the Massachusetts Institute of Technology in 1878 and from the Harvard Medical School in 1883. Then he served as house officer at the Boston City Hospital, becoming physician to the State Prison in 1884, and serving there until 1891. He did much work in accident cases of a medico-legal character. In 1907 he moved to Somerville. In 1885 he married Katherine F. Cole of Charlestown, who died two years later, and in 1893 he married Mabel A. Beattie, of Lancaster, N. H.

He was a Fellow of the Massachusetts Medical Society, and a member of the Boston Medical Library.

HORATIO FRANKLIN COPELAND, M.D.

Dr. Horatio Franklin Copeland, a retired Fellow of the Massachusetts Medical Society, died at his home in Whitman February 8, 1918, of cerebral hemorrhage.

He was born in Easton, November 15, 1842, and graduated from Harvard Medical School in 1865, serving then as U. S. Assistant Surgeon at the smallpox hospital at Bermuda Hundred. He joined the Massachusetts Medical Society in 1878 and settled in general practice at Whitman. He was a member of the American Medical Association.

RECENT DEATHS.

Dr. W. B. Buell of San Francisco was shot and killed in his office by Felice Prato, former sergeant in the Italian Army. Dr. Buell was chief surgeon of the Union Iron Works Hospital. No motive is known for the crime.

Dr. Carroll G. Verrett, formerly of Boston, died recently at his home in Norfolk, Va. Dr. Verrett's son, Dr. William Verrett, died in France last June while serving with the Harvard Medical Unit. Dr. Verrett is survived by his widow, four daughters and five sons.

Charles Seymour Bradley, M.D., died suddenly of heart disease, January 10, 1918, at his home, 71 Walnut Ave., Roxbury. He was born in Newtown, Conn., October 6, 1853, receiving his degree of M.D. from the University of New York in 1873. He settled first in Westboro, Mass., where he practised for 18 years, joining the Massachusetts Medical Society in 1883. He was married in 1878 and is survived by his widow.

The Boston Medical and Surgical Journal

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BACK TROUBLES. A REVIEW OF THE PRESENT SITUATION FROM A SERIES OF HOSPITAL CASES; AND A DISCUSSION OF MUSCULO-LIGAMENTOUS CAUSES.

BY HERMAN W. MARSHALL, M.D., BOSTON.

The amassing of quantities of clinical observations and methods pertaining to back troubles continues with medical progress. And specialists succeed in relieving patients now through their accurate knowledge of special details, who otherwise would continue to have backaches.

Confusion also grows simultaneously in degree and extent with unwieldy accumulations of medical data relating to backs; so also many patients fail to have their troubles relieved promptly now because they are treated by special methods of extremely limited ranges of efficiency.

Medical progress accordingly should be recognized as one distinct thing and the welfare of patients may be quite a different one, especially immediate welfares of those suffering at the present time.

For while carefully planned and executed scientific clinical studies help medical progress and presumably will be of benefit to patients sometime in the remote future, yet they diminish the chances of patients now for successful care when they mainly add to existing widespread confusion.

It would be much better for those who are sick now, perhaps, if all original scientific investigation could be stopped awhile, and all investigators set at work sorting over and rearranging facts that have collected, but which remain poorly understood. Then, on completion of repeated sortings and fittings together of numberless isolated facts into natural groups, according to well-known physiologic and anatomic principles, through impartial critical studies, presumably more correct complete diagnoses and more efficient rational treatments would occur more generally.

The group of present-day sufferers is far too large and too important a one to be neglected as it is; also while advantages of scientific medical research upon the majority of small topics remains so doubtful under the existing conditions.

It is interesting to observe that the bulk of knowledge at present represents an accumulation of numberless scientific studies on definite, easily managed special topics, as the latter have been followed carefully in their various ramifications and bearings.

Original investigators naturally are anxious to show how great the clinical importance of their selected subjects can be; and rarely do they dwell with equal enthusiasm on the insignificance, under other conditions, of features they have been working on. Yet both views are indispensable for fair estimates of average normal values. Therefore, when the overwhelming predominance of one-sided extreme clinical studies is considered there can be little wonder that they obscure effectually the usual significance of various factors which enter into complicated back troubles.

Another point which should be noted is the matter of group diagnoses and treatments. These have been tried recently to improve chances of present patients, and in a limited number of instances desirable breadths of view have thus been combined with unusual accuracy of special details. Undoubtedly some results have been better than those attained by single physicians.

In fairness, however, it must be admitted that combined defects of groups of extreme specialists outweigh advantages of these combinations very frequently; and that in consequence very many patients are worse off than if they adhered to one medical adviser.

Again, it is interesting to compare other very simple and very elaborate methods of treatment, as, for illustration, the abbreviated ones which accident insurance companies employ with injured workmen, in contrast to extensive diversified therapeutic procedures carried on by large scientifically conducted hospitals. It will be seen there are benefits and dangers in simplicity, as well as possibilities of unnecessary care and too much attention paid occasionally to out-patients' back complaints in hospitals.

The writer's conclusions from the foregoing set of facts are that steps in medical progress of greatest importance immediately for patients are impartial critical reviews of already collected facts and data. Rearrangements of masses of unclassified, apparently contradictory, clinical observations are absolutely necessary before adequate working theories are obtained that will explain satisfactorily many individual peculiarities that come to notice, or allow most intelligent satisfactory treatments.

Accordingly a series of hospital cases has been selected to assist in an impartial critical review of some of the features and peculiarities of the present stage of understanding and care of troubles of the back.

Diversified matters discussed in this paper will be taken up under the following main headings: (A) Theoretical Considerations; (B) Practical Results of Having Correct Theoretical Conceptions; (C) Musculo-ligamentous Back Troubles and Comparisons with Other Back Conditions; (D) An Analysis of a Series of One Hundred Hospital Cases of Back Troubles.

(A) THEORETICAL CONSIDERATIONS.

Postural Variations in Spines and Anatomic Variations in Vertebrae—Backaches are recognized as being due very often to these two underlying causes. The first relates to slightly variable relationships among groups of bones in vertebral columns; and the second deals with developmental peculiarities of bones of one person as compared with corresponding ones in other individuals; but peculiarities of muscles and ligaments enter with equal clinical importance, although not mentioned in these anatomical terms, in each instance of postural spinal peculiarity or anatomic vertebral variation.

After acceptance of these two causes for backaches, observers feel an involuntary surprise when many striking cases of vertebral variations or postural peculiarities are encountered with no abnormal symptoms at all. A natural tendency then arises to discount the importance of anatomic features and to conclude hastily that they mean very little or nothing.

Casual observers haven't time to study out the fact, that it is the *physiological balance* always between bones and their musculo-ligamentous supports, which determines development or non-development of pathological manifestations; and that it is never safe to base judgments on anatomic peculiarities alone no matter how great they are.

True relationships can be summarized correctly as follows from careful inspection of many available peculiarities and existing conditions: All anatomic variations of vertebrae possess no practical significance whatever as long as their physiologic stays remain adequate, and many persons presumably go through life carrying anatomic anomalies with practically no trouble at all. Bony peculiarities, nevertheless, always remain latent menaces which are liable to assume pathological importance at any time the flexible supports sufficiently weaken and stretch.

Postural variations in spines may mean very much or practically nothing. Their presence proves that at some past time muscles and ligaments have stretched, if these variations do not represent congenital ones; but they do not indicate in any way of themselves whether subsequent increments of musculo-ligamentous strengths have, or have not, compensated perfectly for changes in postures. They do not indicate whether ligamentous stretchings which produced them were slow, continuous, or interrupted; whether recent rates of ligamentous weakening have become rapid suddenly, or whether there have been no recent changes at all. It is impossible to estimate strengths of backs safely from variations of postures alone; and postural peculiarities, like vertebral anomalies, possess no practical significance worthy of consideration as long as supporting muscles and ligaments are adequate for their tasks. The *physiologic balance* between degrees of postural variations and strengths of flexible physiologic back supports furnishes the only reliable index of functional efficiency of different postures.

Hypertrophic Arthritis of the Spine—Hypertrophic or osteo-arthritis of the spine represents the sum of all transient mechanical stresses and strains; and all different vascular influences acting on it which shift from time to time. It is the record on the bones, particularly around joints and ligamentous attachments, of these combined influences in the individual's past life. It includes effects of various past infections, mild and severe; metabolic vascular peculiarities and variations from time to time; all mechanical injuries as well as ordinary pressures and strains which bones are subjected to more or less continuously. It is not a specific trouble.

If one physician chooses to emphasize only some particular infection of the past or present time, at least no one can disprove very convincingly the possibility of his contentions. The same holds true for enthusiasts who are convinced of the great importance of past or present metabolic disturbances, or effects of unknown internal secretions. Physicians with strong leanings toward mechanical origins for hypertrophic changes can always point confidently to continuous strains sustained as a part of active life, and to innumerable traumata of greater or less severity.

However, it is impossible to pick out any long period in any active person's existence when his joints, bones, muscles and ligaments are not being subjected simultaneously to various mechanical strains, to various infectious influences, as are indicated by constant presence of excreted bacterial products in the urine and to various metabolic products circulating in the blood, derived from vital activities within the person's own tissues. Always, therefore, should hypertrophic arthritis be considered the total sum of a large number of mixed causes and never purely a specific disease.

Sometimes an unusually lively bacterial infection produces acute joint inflammations and is designated as infectious arthritis, that is, if the person is young. But if it happens to come late in life, after accumulated bony changes have become appreciable, then probably it will be termed hypertrophic arthritis, although the underlying cause remains of the same nature as the earlier attack of infectious arthritis in youth. At least the diagnosis of infectious arthritis is found practically to be made seldom in the aged.

A condition of affairs similar to the one existing between infectious arthritis and hypertrophic arthritis also is observed between musculo-ligamentous strains and hypertrophic arthritis. Diagnoses are likely to be "back strains" until hypertrophic changes are seen; then the latter obscure the former, although musculo-ligamentous weaknesses continue to be main causes for pathological symptoms. In hypertrophic arthritis, as with postural variations in spines or anatomic variations in vertebrae, structural bony features, which are easily recognized, obscure other equally important but more difficultly understood causes.

Thoughtful consideration of available data on this subject leads to the following conclusions:

"Hypertrophic arthritis" is an overworked term which means little or much according to the manner bony overgrowths have developed.

It is never safe to estimate the importance of any condition from existing degrees of bony overgrowths alone; for serious disability may continue with only slight bony changes; and surprising recoveries of normal functions are compatible with extensive bony hypertrophies.

Hypertrophic arthritis represents the *result* of many previously acting causes usually more than it indicates the underlying *cause* of present pathological back symptoms.

A physiologic balance is maintained between vital processes going on within bones and outside influences, namely, those exerted on bony structures through mechanical activity and injuries, vascular and nervous channels.

Hypertrophic changes help to show with what degree of success bones have maintained their normal functions and appearances through past difficulties. It is true they roughly suggest probable future rates of change; but such osseous hypertrophies can never be relied on very completely, however, as indicators, since outside acting influences sometimes are abruptly changed, thereby altering, favorably or unfavorably, vital processes within bones, together with future hypertrophies and future functional efficiencies.

Bony hypertrophies, aside from the actual mechanical limitations they cause occasionally in joint motions, or their rare pressure effects on nerves, mean practically nothing themselves as long as other factors in the physiologic balance continue favorable in the future for bones and ligaments.

Limitations of Nomenclatures Used in Diagnosis of Back Lesions—Diagnoses are very commonly made correctly, but they refer often to such small special features that they do not have much significance. To illustrate this point one hundred records from a very large series of back cases were selected. Diagnoses from hospital records showed hypertrophic arthritis in thirty-three cases; infectious arthritis in thirty-four cases; back strains in thirty-three cases. These hundred records were looked through carefully by the writer for occurrences of variations in vertebrae of sufficient magnitude to be mentioned in x-ray findings; and for definite traumata associated with onsets of back symptoms.

Enthusiasts might re-classify these hundred cases in other ways. Nineteen might be considered "traumatic back troubles." Fourteen might be thought of as "vertebral anomalies"; and most of them could be designated as "mixed" lesions. "Mixed" is an undesirable word, however, and it seems better to adhere to descriptive anatomical or physiological terms.

It is correct to speak of a person with slouching attitude, drooped shoulders and hollow or twisted back as an illustration of faulty posture. This is the anatomical conception. Equally correct in many instances is the term "musculo-ligamentous relaxation" of the back, which lays emphasis on strengths and stretchings of physiological supports of the spine.

One hundred back cases showed the following facts:

Hospital Diagnoses

- Thirty-three Hypertrophic Arthritis of the Spine
  - 14 cases had to be diagnosed from clinical appearances without x-rays.
  - 19 cases had x-rays taken sometime during their course of hospital visits. These showed the following results:
    - 19 x-rays
      - 6 were negative for hypertrophic changes.
      - 13 were positive for hypertrophic changes.
      - 5 showed vertebral variations.
      - 1 showed metastatic new growth of vertebrae.
      - 1 showed beginning tuberculosis of spine.
      - 1 showed a probable fracture of a vertebra.
  - 8 cases were associated with traumata at onset of symptoms.
  - 8 cases were considered back strains also, at some time during their course. No diagnosis of infectious arthritis was made, although numerous foci were present. Forty-nine years was the average age of these 33 patients.
- Thirty-four Infectious Arthritis of the Spine
  - 21 cases were diagnosed from clinical histories, without x-rays.
  - 13 cases had x-rays taken which showed the following results:
    - 13 x-rays
      - 6 showed positive hypertrophic bony changes.
      - 3 showed vertebral variations.
      - 3 showed obscure bony lesions.
  - 4 cases were considered to represent back strains also, at some time during their course.
  - 2 cases were associated with traumata at onset of symptoms. Thirty-three years was the average age of these 34 patients.
- Thirty-three Back Strains
  - 24 cases were diagnosed from clinical histories without x-rays.
  - 9 cases had x-rays taken which showed the following results:
    - 9 x-rays
      - 1 showed definite hypertrophic bony changes.
      - 6 showed vertebral variations.
      - 1 suggested spinal tuberculosis.
      - 1 suggested a fracture of a vertebra.
  - 9 cases were associated with definite traumata at onset.
  - 9 cases had foci of infection which justified a diagnosis of infectious arthritis. Thirty-three years was the average age.

If, in turn, causes of musculo-ligamentous relaxations are searched for in the blood which supplies back tissues, then peculiarities may be spoken of in terms of vascular variations. In some instances it may be possible to go further, and to designate more remote causes for harmful vascular combinations or peculiarities. Perhaps some abnormality of the gastro-enteric tract has permitted entrance into circulation of unusual substances or unusual quantities of normal vascular constituents which influence musculo-ligamentous back tissues. Or, possibly, kidneys have failed to remove such circulating substances, allowing them to accumulate and produce their effects.

Musculo-ligamentous tissues in other instances are influenced apparently through the blood by parasitic bacteria or their circulating toxins, attention being called to the infectious nature of the process or to the location of the remote focus. Many organs and symptom-complexes may be loosely connected, more or less remotely, thus with the back through the vascular system and reflex nervous mechanisms.

Mention should be made in passing of the clinical grouping of cancer, cachexia and back pain; other forms of anemia, with rheumatic aches and back weaknesses; specific complaints like nephrolithiasis or constipation and back symptoms; pregnancies, irregularities of menstruation, retroflexions of uteri and other pelvic disorders. Neurologists look upon certain instances of back trouble as due to instability or unusual responsiveness of nervous tissues in psychoneuroses.

The writer would suggest the use, therefore, of as broad comprehensive terms as possible in designating back troubles, now that so many clinical terms have developed. And it is important to realize that because one name is right as far as it goes, another name for the same condition is not necessarily wrong.

All usual aims would be served, if, in the hundred instances which have been cited, a simple classification of "musculo-ligamentous back troubles" were adopted; and greater precision obtained, when desired, by additional clauses. For example, "relaxed" or "irritative" musculo-ligamentous back lesions; or "relaxed musculo-ligamentous back trouble associated with constipation and marked postural defect"; or "irritative musculo-ligamentous back trouble with vertebral variation, hypertrophic bony changes and nephrolithiasis"; or "relaxed musculo-ligamentous back changes with simple, mild debility."

Limitations of Clinical Examinations—Examinations sometimes are called thorough because they represent a great amount of labor, and because they are so in comparison with ones made in the past. Yet some of our so-called thorough examinations are inadequate for accurate testing of many conditions, as, for example, changing strengths of sacro-iliac ligaments and slight displacements of sacro-iliac joints.

It would be convenient if strengths of sacro-iliac ligaments could be measured directly, in order that comparisons might be made between different joints, or in the same joint from time to time. Much clearer ideas would become possible if irregularities of sacro-iliac joint surfaces, together with variations in their sizes and shapes, could be estimated.

With these data available, it might become easier to judge how serious any given sacro-iliac strain was apt to be from degrees of ligamentous weakness shown, and the likelihood of slipping, as indicated by surface irregularities and outlines of joints; for some joints require greater stretchings of ligaments than others to allow unlocking of opposed elevations and depressions on their slightly uneven surfaces.

It would add greatly to precision, also, if vascular variations could be measured from time to time that are causes of ligamentous changes from time to time; but, unfortunately, there are no available clinical methods suitable for routine use in determining amounts of all the numerous circulating vascular constituents; nor for identifying circulating bacterial toxins which are assumed to act on the joints.

Our ideas on these matters now have to be obtained indirectly with very considerable inconvenience and effort. And, undoubtedly, it is owing to these circumstances that sacro-iliac displacements are still topics for discussion; and that relationships between lesions of internal organs and backs, as well as relationships between mild debilities without demonstrable pathological lesions of internal organs and backs, remain in dispute. Many doctors cannot, or will not, take time and trouble to puzzle out sacro-iliac peculiarities from data at hand; and they are the ones who are the disbelievers.

It is not possible to go into details at much length here concerning the evidence for mild debilities being causes of transient weaknesses of back, muscles and ligaments. Often the only clues consist of a few ordinary complaints and physical signs, namely, loss of appetite, recent slight losses in weight, nervous fatigue or worry and mental irritability, slight muscular weaknesses and relaxations, and slight secondary anemias.

Strictly scientific physicians state that it is dangerous to build the science of medicine and medical progress on such flimsy clinical foundations as these; and they state the truth. Nevertheless, patients, who are sick now, often can be very considerably benefited if their physicians will only attempt to understand how nervous fatigue can start a train of symptoms. If nervous fatigue is maintained long enough it can upset digestive and excretory functions temporarily, cause transient accumulations of waste products or other substances in circulation, produce mild anemias and temporary musculo-ligamentous relaxations, and go so far as to induce backaches. Such physicians then can have the satisfaction of relieving many of their debilitated patients quickly by prescriptions of rest, diet regulations and tonic-eliminative drugs, the latter given in accordance with well-established physiological and pharmacological principles. And it does not seem that these successful medical practices will seriously retard medical progress in the future.

For those who do not yet understand sacro-iliac joint slippings, or who disbelieve in them, the following explanations are intended.

Figure 1 shows photographs of a number of anatomical specimens; and, as the pictures were taken under the same conditions by the writer, all being made with the camera at the same distance from the objects, the different sizes, shapes, and surface irregularities of sacro-iliac joints are strictly comparable. Outlines of articulating surfaces have been made clearer by dotted lines; but original shrivelled cartilaginous joint surfaces can be seen still with cartilages in their actual positions. Obviously, different degrees of resistance in slipping of joints would be offered by these various forms and surfaces.

Confusion that arises about displacements comes mainly from the fact that no laxity of ligaments can ever be demonstrated in the majority of instances; consequently, casual observers declare slippings rarely take place. Their ideas only are a little careless and rough, for they imagine too gross and readily recognized lesions.

What actually takes place probably is as follows: Some patients engaged in lifting feel something give out suddenly in lower parts of their backs, and immediately, without thinking, they relieve the strains upon their backs.

Strains are severe enough to tax ligaments nearly to limits of their normal inelastic strengths, and finally these limits are exceeded for the weakest ligaments. The latter really stretch an extremely slight amount before they rupture; and the moment they begin to lengthen, a tendency of joint surfaces to slip increases until actual displacements occur. Such dislocations are extremely minute, however, as a rule, because strains on backs are instantaneously relieved. The weakened sacro-iliac ligaments are able to contract again and continue to hold

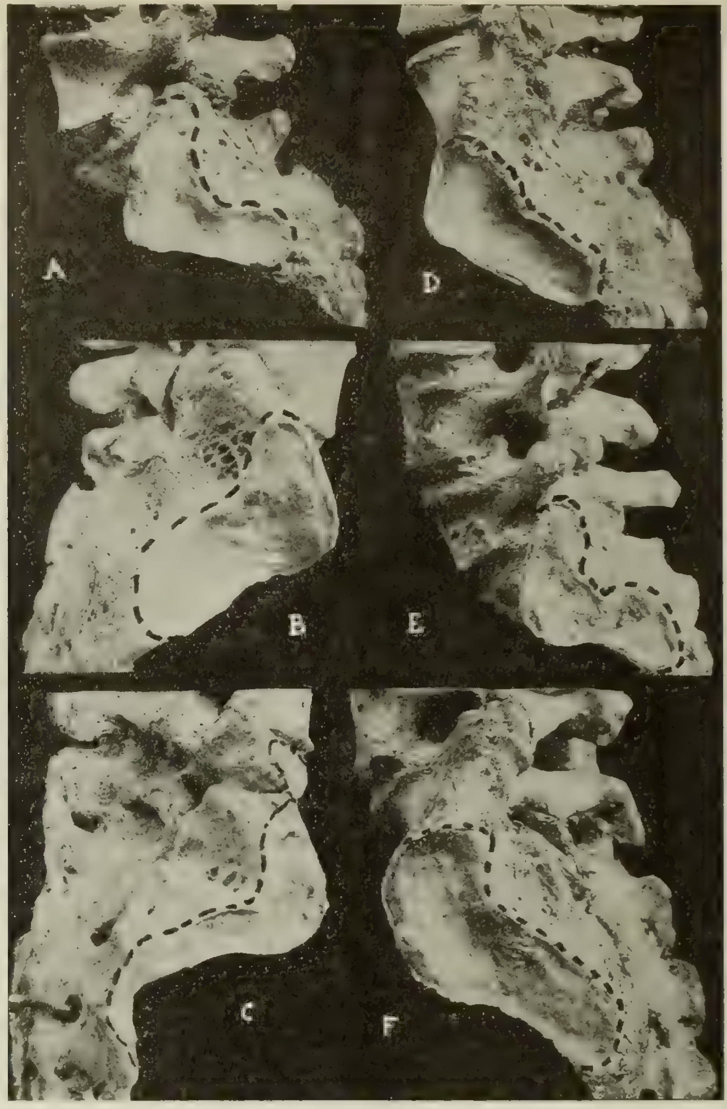

FIG. 1.

joint surfaces immovably in their new relationships. Further displacements of such joints, which have slipped, are possible only by repeated new strains of sufficient severity to overbalance again the limits of ligamentous inelasticity. Ligaments, although weakened, are still very strong, so there are no outward changes appreciable after minor dislocations.

Extremely heavy lifting or sudden twistings are necessary to produce displacements of sacro-iliac joints in robust, healthy men; but if an individual happens to remain quiet, and his back muscles and ligaments weaken steadily through vascular defects from debility or auto-intoxications, then only a moderate or possibly a slight mechanical strain is required to produce displacements.

Weakenings of ligaments from vascular causes may go so far not infrequently that back symptoms develop without appreciable traumata, simply from strains sustained in supporting the weight of the body. Severities of back injuries therefore, are not very satisfactory indicators alone of the probable courses which resultant back troubles will take. Always it is necessary to take into consideration, as far as blood tests and general examination permit, the quality of circulating blood and its defects.

These illustrations serve to show how attempts have to be made to circumvent limitations of clinical methods, and how that failures in understanding can be traced sometimes to limitations of human patience and perseverance. Further considerations of musculo-ligamentous peculiarities have to be deferred until they are mentioned in the section on musculo-ligamentous back troubles.

(B) PRACTICAL RESULTS OF HAVING CORRECT THEORETICAL CONCEPTIONS.

Orthopedic belts, braces, jackets and exercises, then, will not be applied indiscriminately to every case of vertebral anomaly or postural variation. It will be realized that new back strains may be brought on by therapeutic meddlings when physiological balances between bones and their musculo-ligamentous supports already are in favorable states of equilibrium; or at any rate, that treatments are unnecessary under these conditions.

Operations on long transverse processes of fifth lumbar vertebrae will not be attempted without recalling that surgery does not remove underlying causes for ligamentous weaknesses. Such vertebral processes have no significance as long as ligamentous stays do not stretch and allow them to impinge on adjoining bones; therefore, there will be hesitation in still further weakening flexible supports of bones through additional injuries unavoidably sustained in surgical measures.

Vascular peculiarities responsible for temporary weakenings of muscles and ligaments will not be neglected in treatment, as so often happens now when mechanical features absorb nearly all attention.

Patients with hypertrophic arthritis of the spine will not be given discouraging, hopeless diagnoses because extensive bony overgrowths are shown in x-rays. They will be examined and treated rationally to reduce future unfavorable influences acting; and possibilities of permanent subsidence of severe painful symptoms will be recognized, even with well-advanced hypertrophic changes, when some important cause for the latter can be removed.

Generally, there will be better balanced ideas regarding physiologic alternations of exercise and protection; dangers of too much care or too great neglect; comparative merits of different forms of apparatus, and numerous small details which can be discussed better in the analysis of the series of hospital cases.

Briefly summarized, the practical result of securing correct theoretical conceptions constitutes one of the first important steps towards gaining efficiency in treatments that rightly can be expected now. Then perhaps there will cease to be so much confounding of wealth of medical data, which is great, with skill in directing treatments which still is decidedly poor in very many instances. We have very little reason now to pride ourselves on our ability to care for back troubles properly, when there are so poor general agreements as to a practical working hypothesis, and when so many inefficient one-sided methods of limited scope still are used so widely without adequate general conceptions.

(c) SPECIAL MUSCULO-LIGAMENTOUS PECULIARITIES AND TESTS. OTHER LESIONS OF THE SPINE.

All simple postural strains, traumatic strains, torn ligaments, myositis, toxic or mixed infectious back lesions, synovitis, so-called typhoid spines, hypertrophic arthritis and spinal bony anomalies will be grouped in a single comprehensive class of musculo-ligamentous back troubles. This is advisable because differentiations are so difficult or impossible often; also because several of the list commonly occur simultaneously; and because musculo-ligamentous features always are very prominent in all, while other special peculiarities possess more limited significances.

However, there remain to be mentioned spinal fractures and dislocations, tuberculosis of the spine, vertebral neoplasms, spinal cord tumors and nervous disorders which have such well-defined natures that their important specific sides overshadow other features, including musculo-ligamentous ones.

It seems appropriate, accordingly, to discuss certain characteristics of ligaments and muscles and afterwards the other mentioned topics in turn.

Special Ligamentous Peculiarities—Use and disuse produce opposite effects on tissues, including muscles, ligaments and bones. With use muscles swell in size and increase in strength, bones exhibit rearrangements of their internal structures to compensate for increased strains, and ligaments hypertrophy to meet their increased physiologic requirements. With disuse muscles shrink and become less strong, bones show rarefying processes in their structures, and ligaments slowly weaken.

Ligamentous changes are most difficult to prove, especially small, slow variations from time to time, as has been pointed out with regard to sacro-iliac joints. But there are no uncertainties about great changes, namely, the ligamentous stretchings and weaknesses which occur in serious joint destructions like tabetic knee joints. Lesser changes presumably take place in milder troubles in similar ways although recognized with difficulty.

Ruptures of ligaments leave them with frayed, ragged ends. In more gradual changes entire masses of ligamentous fibers elongate, or fibers slip among themselves dislocating previous relationships; but it is impossible practically to show what really does take place in any individual case.

The chemical reactions of cloth fibers are useful in assisting comprehensions of the changes taking place in ligamentous strengths. Different pieces of the same textile fabric which have been treated in different ways with chemicals or dye-stuffs show variations in strengths subsequently as a result of particular kinds of treatments they receive. Possibly all look the same after chemical processes as before, yet on testing them some are found to remain strong while others are "rotted" more or less.

It is of interest that connective tissues, including ligaments, outside of the body react in characteristic ways to acids and alkalies, swelling and shrinking according to chemical reactions of the medium in which they are immersed. On a commercial scale these connective tissue peculiarities are witnessed in "plumping" processes associated with preparation of leather.

From these comparisons, it is not difficult to imagine how living ligamentous tissues can be influenced in chemical or physical ways by variable compositions of blood and lymph to which they are subjected. They do not change much in outward appearances, but presumably some transitory vascular conditions are more favorable than others for their strength. Some unfavorable blood conditions, for example, those of auto-intoxications and debilities, apparently produce transitory weaknesses analogous to "rottings" of textile fibers; but with the difference that strengths are slowly regained again after objectionable vascular defects pass away.

Finally, as signs of diminishing vitality, can be observed beginnings of uratic deposits or calcifications in and upon ligaments, at their points of insertions where mechanical strains and injuries have been greatest.

Clinical Tests for Muscles and Ligaments—The practical dilemma in which we find ourselves at present consists of our inability to measure accurately the principal functions of muscles and ligaments, namely, their strengths, by any routine clinical method. Nor can we measure clinically now those unknown vascular peculiarities in patients which are producing changes of musculo-ligamentous strengths from time to time. Even our estimates of the severity of traumata experienced are comparatively crude. How then can it be expected that physiologic efficiencies of backs can be judged with great precision; that exact states of physiologic balance, from time to time, in different individuals, between bony peculiarities of their spines and their flexible spinal supports, can be determined when strengths of the latter are so imperfectly known?

The answer is that at present accurate ideas are not possible, and that this state of affairs must remain until new clinical tests are devised for measuring muscular and ligamentous strengths; and until new clinical blood tests also are discovered by which identifications and easy measurements of innumerable quantitative vascular peculiarities become possible. Meanwhile, by indirect means, we must continue to gather clues of musculo-ligamentous peculiarities in whatever ways now are available.

Sizes of muscles offer an opportunity to gauge roughly their extremes of weakness and strength. Peculiarities of postures, when not due to developmental variations, draw attention to possibilities of musculo-ligamentous stretchings of the past, from which individual histories of such patients' past troubles indicate whether existing postures mean very little or very much. The occupation, and history of injuries, indicate roughly how much any particular person's ligaments and muscles have had to resist. Distribution of back pains roughly suggests what particular group of muscles or ligaments has been strained. Tenderness upon pressure is an extremely important symptom in the localization of back lesions; and there may be diffuse tenderness throughout irritated muscle masses at times, or sharply localized tenderness at other times over ligaments and ligamentous attachments.

X-rays reveal spinal anomalies, but alone they furnish no clues whatever as to whether such bony variations are to be considered factors of weakness or strength or how they influence ligamentous variations. It is from histories of these patients, together with evidences of local trouble, as revealed by local sensitiveness to pressure, that x-rays become valuable in diagnosis of musculo-ligamentous lesions.

Further information of a certain kind regarding back muscles can be gained from local spasm of muscles as they respond to irritations; while limitations in normal ranges of back motions are indicative of back defects of some sort. Simple blood tests reveal anemias and possible relationships with back weaknesses. From this vascular point of view, extending to various organs of the body, are loosely traced probable or improbable relationships.

The list of indirect clinical tests for backs thus can be enlarged indefinitely, each adding its bit to the evidence relating to musculo-ligamentous strengths and their variabilities from time to time. But each is likely to be very limited in its scope, and, therefore, is never to be given much weight except in a very small proportion of all cases.

Fairly good estimates of strengths of backs can be secured from testing individuals' back lifting powers; yet, of course, weights lifted show as much regarding the integrity of the bony spine as they do concerning its flexible stays. Some ideas are obtained concerning the efficiencies of both. The writer makes use of a rough weight lifting test, which can be made easily and quickly with a self-registering dynamometer, that occasionally indicates interesting differences. Patients simply are directed to lift as hard as possible on the dynamometer, and are cautioned to desist as soon as they begin to feel uncomfortable pain or weakness. This gives an idea of the strength of muscles, ligaments, and bones taken all together as a single unit which can be recorded in pounds. Two illustrative cases will indicate what differences may be found.

A stevedore came with complaint of pain situated low in the back, of gradual onset, without trauma. There was more than the average lumbar antero-posterior curve. Pains were moderate and diffused in sacral and lower lumbar regions. Localized tenderness was absent. Back motions were cautiously made and slightly restricted. Back muscles stood out as prominent, firm ridges on each side of the deep median furrow of the back.

The second patient also was a middle-aged man with very prominent lumbar muscles, with restricted back motions, and a history of a fall a year previously.

When the first one lifted on the dynamometer it registered three hundred pounds, while the second patient could pull only ten pounds before pain and weakness were felt uncomfortably. An x-ray of the second case showed an old impacted fracture of the first lumbar vertebra. Further examinations revealed in the first man the fact that all muscles were prominent and well developed, and that subcutaneous fat was very scanty. He had a mild musculo-ligamentous back strain, but also had development of an athlete with hard, prominent, yet not contracted, muscles of the back. The second man was trying unconsciously to protect his injured spine by reflex muscle spasm.

Electrical tests have been devised for strained back muscles, and although not commonly used, they do help in favorable instances to show undoubted functional muscular differences.

An apparatus which the writer uses consists of a series of condensers, plates of mica coated on both sides with tin foil and all embedded conveniently in paraffin, so that an electric current can be passed into the system according to the need, and from one to nineteen of the various sized plates utilized. When the current enters the connected tin foil discs on one side of the mica plates there is induced a momentary current in the independent system of discs insulated by the mica on the opposite sides of the plates. This quantity of electricity, which is momentarily induced by making and breaking of the primary electrical circuit, is led away to muscles where it may cause visible muscular contractions around a stimulating electrode placed on any selected spot, provided enough units have been thrown into the series to furnish sufficient electricity.

The advantages of the apparatus are that it provides variable definite quantities of electricity measured in a reliable, easily regulated manner. Extremely minute doses (0.01 microfarad) are tried first experimentally, and increased in regular way, until muscular contractions just begin to occur in response to stimuli. Smallest quantities required to cause visible contractions are used as end points in readings and these amounts are recorded.

With an electrical myometer of this sort, striking differences are found at times between relaxed erector spinae muscles of the two sides in the lumbar region, that correspond with unilateral distributions of pain. Increased sensitiveness to electrical stimuli is found in some instances in gluteal muscles as well as lumbar regions, showing that we must not narrow down our conception of back strain too closely. When spinal muscles are contracted reflexly around some irritated spinal segment larger doses of electricity are required to obtain direct contractions in these tense muscles than in relaxed ones. Nervous, apprehensive patients respond with reflex muscular contractions occasionally as soon as the first sub-minimal dose is tried, then as the amount is increased there appears the usual small visible contraction around the stimulating electrode, followed quickly by the second reflex contraction of the whole muscle. When the electrode is brought into the neighborhood of an irritated sacro-iliac joint there may be a feeling of nausea produced, with no muscular contraction.

The apparatus is used by taking repeated readings because, similarly as in estimating the presence or absence of knee reflexes, it is necessary that slight variations in positions are tried before correct estimates are secured.

There are many limitations to the application of the myometer, and many patients show no differences which can be depended on, nevertheless, it is useful in directing attention away from bony peculiarities that have to be managed somehow just as they exist, to musculo-ligamentous changes that can be rectified and which should be treated by every reasonable available means as quickly as possible in order to prevent development of chronic weaknesses.

In concluding the discussion of musculo-ligamentous back troubles mention has to be made to referred back pains. Some physicians claim back pains represent referred nervous phenomena originating from demonstrable lesions of internal organs. Others are equally certain that such backaches can be traced to definite abdominal or pelvic lesions, perhaps, but that conditions essentially represent harmful variations of the blood which produce musculo-ligamentous relaxations or irritations in the back.

Neither theory can ever be proved or disproved conclusively because both possibilities always simultaneously exist, neither one can be excluded in any given instance, both are plausible, and perhaps both are correct at times; but there the matter must rest at present. So let us admit our limitations instead of unwisely engaging in useless controversies.

Fractures and fracture-dislocations of vertebrae. Fractures and fracture-dislocations of the spine, of special interest in connection with back troubles here under consideration, are not obvious fractures accompanied by grave spinal cord lesions, but obscure impactions of vertebral bodies, or fractures of transverse processes of vertebrae, without spinal cord injuries and without usual signs of fractures. These can be diagnosed positively only by means of x-rays, so that many of them have been diagnosed in the past as chronic severe cases of musculo-ligamentous back injuries.

The topic of fractures and fracture-dislocations will not be entered into in detail; but one instructive unusual case that was examined by the writer for the Massachusetts Industrial Accident Board will be cited and x-rays given to illustrate some of the possibilities which have to be thought of.

A fifty-three-year-old man fell 18 feet from a staging and landed on his buttocks in a sitting posture with his back bent forward. He went home almost immediately after the accident on an electric car, and within a few days an x-ray was taken which showed no definite bony spinal lesion. He was given a combination steel back brace and abdominal-pelvic belt and after one year's time he was examined by the writer. At this later time the back brace was being worn, and there was a very slight prominence at the fourth lumbar vertebral spinous process. Back motions were limited greatly. He could not bring a hod of coal upstairs on account of the feeling of back weakness. Pains in the gluteal region, of which he had constantly complained, were subsiding but were still quite severe. No pains were present in the legs; knee-jerks were equal and very lively; tenderness was localized and severe at the lumbo-sacral juncture. Additional x-rays were thought advisable and were taken by Dr. Arial George of Boston. They revealed a fracture-dislocation of the fifth lumbar vertebra on the sacrum. In the lateral view, which is given below, and which was taken through the pelvic bones, can be seen a surprising degree of forward dislocation of the fifth lumbar vertebra which could not be identified in any way from antero-posterior plates usually taken.

Tuberculosis of the Spine. Typical tubercular lesions of the spine with extensive destructions of vertebrae and with visible bony knuckles or deformities are omitted from consideration, because they are well understood. There are some cases of spinal tuberculosis in adults, however, which remain latent for long periods before appreciable x-ray changes are observed in bones, or before bony deformities become evident.

These patients inevitably receive diagnoses of infectious arthritis, back strain, or hypertrophic arthritis until x-rays show true natures of the lesions. It is not uncommon to have some tubercular patients come for treatment with histories of gradually developing back pains, with or without injuries, and to have back muscles only slightly rigid with motions limited in only moderate degrees.

In these patients painful symptoms not infrequently subside slowly and completely with protection; and then the patients disappear for six months or a year or more. They have tubercular infections apparently of such low grades of virulence that alternate periods of back pain and freedom from pain may occur for years before x-rays finally demonstrate definite and often quite extensive tubercular bone disease without deformity.

One practical lesson from these perfectly reliable clinical facts is, that all suspected sacro-iliac displacements should have the precaution taken of having x-rays made always before forcible manipulations are attempted.

Other causes for back symptoms. Neoplasms of vertebrae have to be mentioned which are

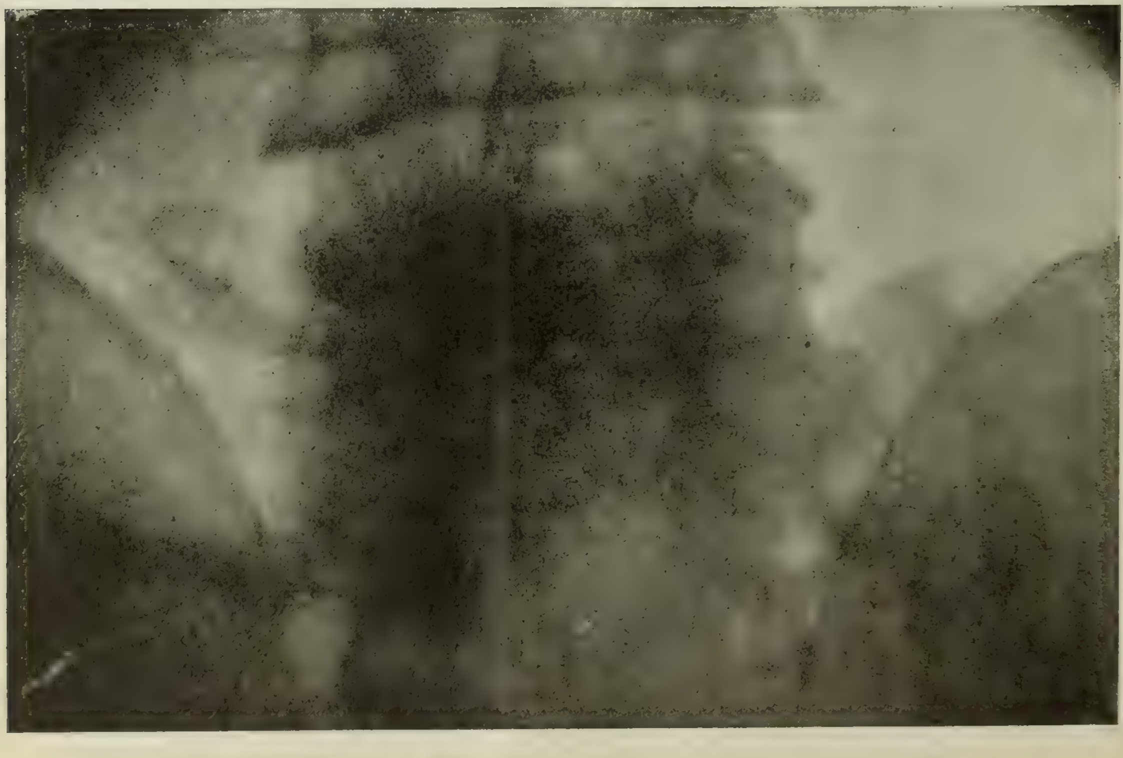

Fig. 2.—Fracture-dislocation of fifth lumbar vertebra on sacrum. (Dorso-ventral view.)

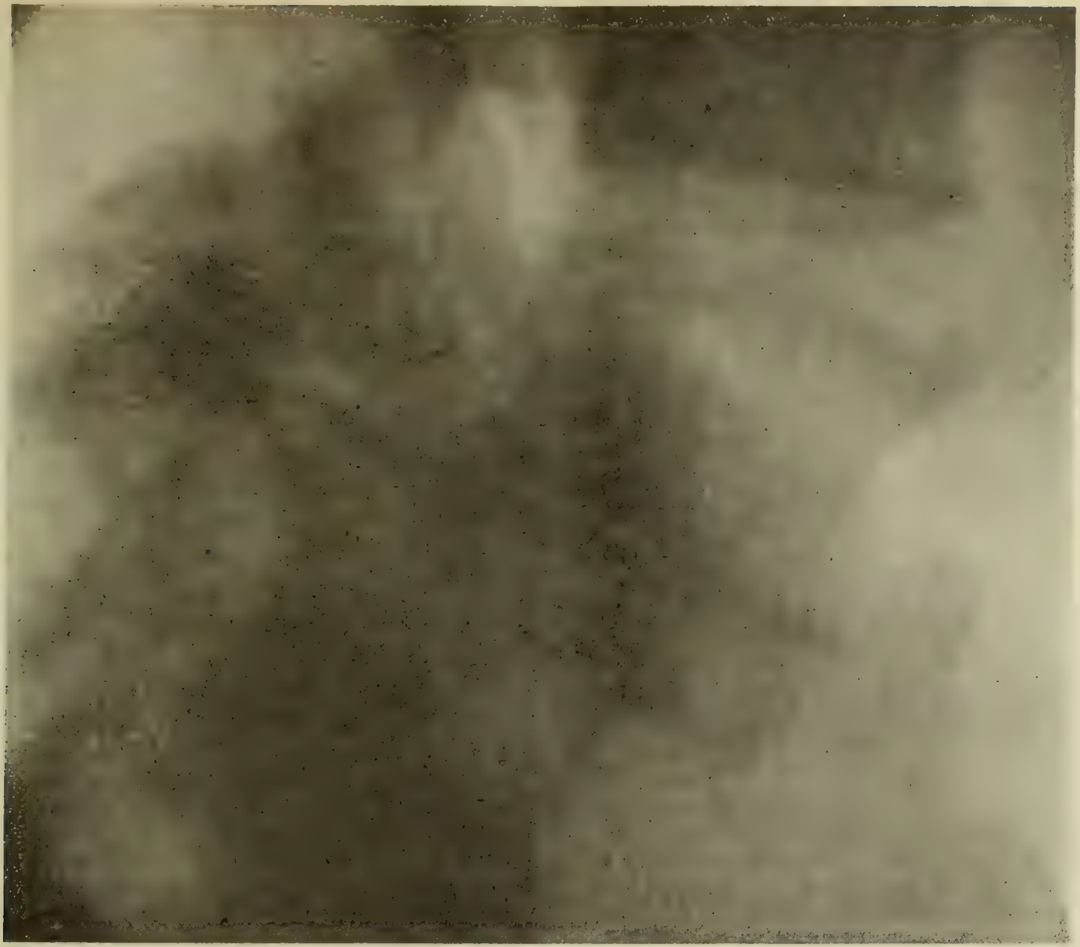

FIG. 3.—Fracture-dislocation of the fifth lumbar vertebra on the sacrum. (Lateral view taken through the pelvis.)

secondary to new growths in the body elsewhere; and histories of the latter help to fix suspicion on the probable character of back pains in these patients, yet x-rays are needed to make diagnoses positively.

Primary bony new growths, sarcomata of the spine, are encountered not very infrequently, and like tubercular lesions, they await x-ray differentiations for positive proof usually of their existence. Commonly, they are diagnosed sacro-iliac strains, infectious arthritis, or hypertrophic arthritic changes until detectable bony changes settle their characters.

Spinal cord tumors, particularly new growths of coverings of caudae equinae, produce low back symptoms. All cases with bilateral pains that extend into both legs should be carefully investigated. One such patient which the writer saw in the practice of another physician died very suddenly without any very obvious cause for death and the autopsy showed a glioma of the cauda equina. The patient presented the usual clinical appearance of a severe sacro-iliac lesion aside from bilateral leg pains. There have been instances of relief from operations with removal of these tumors in those cases in which diagnoses have been made.

Syringomyelia is associated with irregular back pains that are mistaken occasionally for musculo-ligamentous back strains, but as soon as this trouble has developed enough to show its characteristic features then differential diagnoses become possible.

Finally, must be mentioned, for completeness, rare cases of abdominal aneurysms which erode the spine and cause severe back symptoms. Localized arteriosclerotic changes of arteries of spinal cord and spinal ganglia also are said to be causes of very severe back pains; and it seems more reasonable to the writer to explain some back symptoms in this manner than to imagine nerves are pinched in vertebral foramina. Hemorrhages into cord coverings and caudal neuritis have to be included in the list of causes of low back pains.

(D) AN ANALYSIS OF A SERIES OF ONE HUNDRED HOSPITAL BACK CASES.

Hospital records of thirty-three hypertrophic arthritis, thirty-four infectious arthritis, and thirty-three back strain cases, mentioned already while discussing limitations of diagnoses, will be reported further here in a single group.

Twenty-nine of the hundred cases came either once or twice, mainly for diagnoses or x-rays.

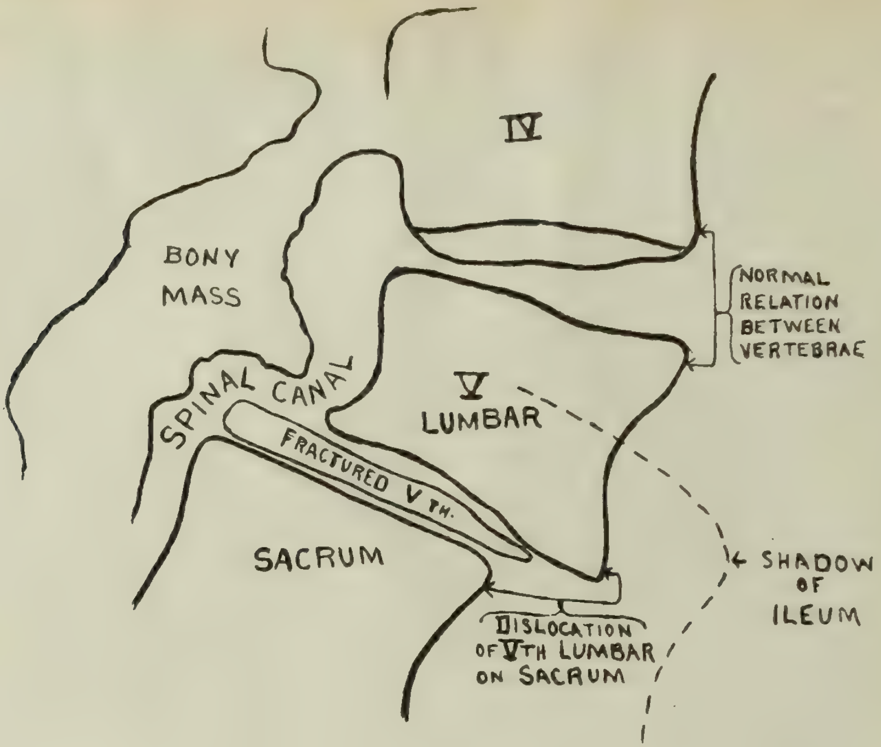
IV
BONY MASS
NORMAL RELATION BETWEEN VERTEBRAE
SPINAL CANAL
V LUMBAR
FRACTURED V TH.
SACRUM
SHADOW OF ILEUM
DISLOCATION OF V TH LUMBAR ON SACRUM

FIG. 4.—Tracing of bones in Fig. 3.

Sixty-four of the hundred cases completed their treatments and disappeared in a year or less, coming to the hospital from two to twenty-four times, averaging six or seven visits before they were lost to observation.

Seven of the hundred cases required one year or more of treatment, owing to recurrences of back symptoms. The longest time was two years and two months, and even then relief was not obtained.

Average durations of treatments among the majority of cases of back strains and infectious arthritis were six or seven weeks. In the hypertrophic group of older patients, ten to eleven weeks of treatment were required, on the average, by most of them.

Among these hundred patients twenty plaster jackets were put on; twenty-four webbing belts fitted; adhesive strappings were applied to forty-four patients; leather jackets or steel braces given to seven persons; medico-mechanical exercises prescribed in ten instances; hydrotherapeutic treatments taken by eighteen patients; and twenty-nine patients received drugs of various kinds. Seventy-two of the hundred were examined in more than one department of the hospital. Ten had their teeth examined by x-rays for infectious foci, and seven of the ten showed negative results.

Plaster jackets were put on within a few days after patients first made their appearances, in fifteen of twenty cases. The remaining five were deferred until moderately severe symptoms failed to respond to adhesive strappings.

The usual indications for plaster casts were x-ray appearances that looked suspiciously like early tubercular spinal lesions; or very acute pains with marked muscular rigidity.

Duration of wearing jackets varied from nine days to ten months, depending upon different circumstances.

Splitting of jackets often occurred after two or three weeks' wear, then patients continued to wear them split for variable lengths of times, according to individual requirements, while belts were being made.

Results of wearing of jackets. Two patients experienced extreme relief immediately. The majority of patients were relieved more slowly. One patient claimed that no relief was obtained, one said the jacket made his pains worse, and one never returned after the first visit at which the jacket was immediately put on. One, which subsequently proved to be malignant disease of the sacrum, was relieved greatly for nine weeks previous to his disappearance from hospital observation.

Results of adhesive strappings. They caused great relief promptly in one to seven days among six patients of the forty-four which were strapped. The majority were improved more slowly. No relief was obtained in eight cases. and one patient stated that strappings increased back pains. The most satisfactory result occurred with complete relief in twelve days from two strappings in an acute, moderately severe, type of back strain. Webbing belts very commonly were substituted for strappings, if the latter failed to relieve pains completely after a few weeks.

Results of webbing belts. They were ordered after adhesive straps, or for patients whose severer symptoms had been partly relieved by plaster jackets. They were worn very variable lengths of times, patients commonly ceasing to return to the hospital as soon as they received their belts, while symptoms were subsiding.

Leather jackets and steel braces were prescribed seven times for chronic troubles and faulty postures. They duplicated in convenient forms many of the effective features of plaster casts. They usually are worn for considerable periods.

Hydrotherapeutic baths, given to eighteen patients, were prescribed immediately in seven instances, one to nine baths in twenty-five days or less. Usually when they were combined with tonic-eliminative drugs in early cases there followed prompt relief of backaches except in one case of associated kidney stone. Ten of eighteen cases were prescribed after plaster casts had partially relieved the pains, or after Zander exercises had been tried, or webbing belts were producing only fair progress. Four or five bath treatments generally were taken on the average; but one patient received thirty-eight in one year and five months.

Results of hydrotherapeutic baths. Prompt relief followed in several cases, and all patients were more or less improved for a while, at least, also no unpleasant effects were observed.

Medico-mechanical exercises were given almost always late in courses of treatments, after belts and jackets had partly relieved pains at the expense of increasing stiffness. From one to twenty-seven treatments were received in times ranging down from three months as the maximum. The majority of the ten patients took only three or four on the average. No bad results were reported and usually patients were partially limbered up again.

Medicines were given in medical departments of the hospital to eight patients for special complaints. Aspirin or sodium salicylate was prescribed to eight other patients. Mild tonic-eliminative drug combinations were given in the orthopedic department to twenty-one patients in order to rectify obscure vascular conditions, and thus accelerate restorations of musculo-ligamentous strengths.

Interpretations of Statistics; Criticisms; General Conclusions—Statistics presented by these hundred cases indicate that enough was done for them, and that a sufficiently varied set of therapeutic measures was employed. Fair degrees of skill, at least, are shown by absence of poor results in most cases; and exact degrees of skill never can be estimated closely from statistical data.

Matters of very vital importance from standpoints of patients' welfares at the present time, however, are these variable degrees of dexterity which are shown in prescribing therapeutic agents and courses.

Many learned scientific medical men allow their interest to cease to a great extent when transition lines between medical science and the art of medical practice are reached. On the other hand, unlearned practitioners of various sorts often study closely their patients' comforts. By adopting certain reliable methods originated by careful scientific physicians, non-scientific men may acquire skill greater sometimes in treating patients than doctors of much greater scientific training, who neglect this final step in successful medical care. For not infrequently patients state that, after trying all kinds, they have received most benefit from certain doctors whose reputations are not the best because of the irrational, fantastic theories they hold. Yet, undoubtedly, certain patients really are relieved by unconsciously skillful practices of these questionable individuals who do not understand why they succeed and who offer entirely wrong explanations for benefits received.

This state of affairs should not exist to the extent it does; and there should be as much care taken with patients' welfares by the best mentally equipped medical men as there is great interest shown in medical science, even though art in practice does consist of understanding and applying innumerable, comparatively uninteresting details of familiar methods and remedies.

Complete, perfect, theoretical conceptions of back troubles avail little practically, when there is not adequate knowledge of such exact details, as, for example, the time to take off a plaster jacket that has been put on, or if adhesive plasters cannot be applied in a way to reinforce weakened back muscles and ligaments. The weakest link in the chain of procedures determines the strength of the whole system of links.

It is an unfortunate fact that a considerable percentage of practitioners still do not know much about these very simple matters. There are thousands of belts and braces hung loosely on patients now, which are not doing their intended work. Medicines are prescribed still in routine manner very often with greater regard to over-dosage than to securing their desired physiologic effects. Strappings are applied many times without much thought of anatomy, or muscular arrangements, nor of limitations of strengths of straps.

The writer believes that plaster jackets are left on usually too long in cases of musculo-ligamentous strains, and that stiffness from long immobilization retards recoveries very frequently. Four or five days is a sufficient time to give strained or irritated tissues a chance to be relieved appreciably. Then, jackets should be split, and afterwards reapplied, if necessary, a part or whole of the time. Splitting also allows applications of firm adhesive strappings under them, or combinations with massage and hydrotherapy. Wearings of jackets resemble wearings of plaster casts after fractures; both may be extremely desirable, yet both are liable to result in extremely undesirable stiffness if not discontinued soon enough.

Too scanty local protection, on the other hand, is observed rather commonly among industrial accident cases. Insurance companies find that drawbacks of too much protection in the majority of cases are greater than risks from minimum amounts of medical care. They encourage injured workmen to use their backs as soon and as much as possible. And some of the latter have delayed recoveries from too much activity when backs are weak.

Combinations of adhesive strappings with tonic-eliminative drugs give very satisfactory results in cases of average severity and of average duration. They are better than either one alone. Drugs and diet regulations, in combination with plaster casts, likewise are beneficial; and, in fact, very few patients' conditions are so purely mechanical that they will not be improved more or less by measures that improve qualities of circulating blood. Yet, very commonly patients are treated as though they are only defective mechanical machines.

Manipulations of sacro-iliac joints happen not to have been made in any of this series of cases; nevertheless, manipulations occasionally are extremely beneficial. They sometimes terminate in a few minutes pains that have lasted for months, and some patients are so greatly relieved after moderately forcible manoeuvers that they beg to have them repeated. Care has to be exercised, however, with forcible manipulations not to aggravate latent tuberculosis which is simulating sacro-iliac troubles, or not to increase existing strains of sacro-iliac ligaments, as may readily happen when patients are etherized. Since it is impossible to detect slight slippings of sacro-iliac joints, manipulations have to be made rather blindly, attempting to force joints back into their original position by pressures and pulls in directions opposite from the ones which have produced displacements.

Patients who have felt something "give way" in their backs can be manipulated gently very soon. Those who are not making satisfactory progress at the end of two months also should be gently stretched and pulled without anesthesia. Long-standing, severe cases occasionally obtain prompt relief from the continuous pull of extension weights attached to the leg while patients lie in bed.

All variations in combinations and variations in lengths of administrations of different therapeutic measures cannot be discussed in this paper, although upon them depend shortenings or prolongations in times of recoveries.

Enough has been said, however, to show that unsatisfactory states of affairs now can be traced often to utterly inadequate theoretical conceptions or to inadequate, bungling treatments. There is a justifiable optimistic view possible from contemplating the very great achievements of medical science recently, yet, in fairness, a balance has to be struck, with some pessimistic consideration of the vastness of our present failures. An opinion is thus reached that progress in care of back cases is being slowly made, and that there are tremendous opportunities for improvements with the facts and tools at hand, depending simply on greater carefulness, thoughtfulness and skill.

In conclusion, the writer wishes to acknowledge his indebtedness to Dr. E. G. Brackett of Boston, for many privileges at the Massachusetts General Hospital; and to Dr. F. D. Donoghue, medical adviser to the Massachusetts Industrial Accident Board, for numerous suggestions on phases of the subject not generally considered.

LITHIASIS WITH BILATERAL RENAL INVOLVEMENT.*

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When lithiasis is found to exist with bilateral renal involvement, certain problems of diagnosis, prognosis and treatment arise which merit special consideration. The various conditions in which such involvement is present may be as follows:

1. Bilateral nephrolithiasis, including stone in the ureter on one or both sides.
2. Lithiasis in one kidney and disease in the other.
3. Lithiasis in a solitary kidney.
4. Lithiasis in a fused kidney.

Bilateral Nephrolithiasis.—On reviewing the records of the Mayo Clinic from Jan. 1, 1910, to Oct. 1, 1917, it was found that 62 patients had been operated on for bilateral nephrolithiasis. During the same time, 504 patients with unilateral lithiasis were operated on, making a percentage of 12.3 of bilateral lithiasis occurring in the operative cases. It is, however, difficult to determine the exact proportion in which bilateral nephrolithiasis occurs because of the many associated factors. It would be necessary to include, (1) all cases of bilateral nephrolithiasis and ureterolithiasis, which for various reasons were not operated on, (2) cases of ureteral stones on the opposite side previously removed by operation and cystoscopic manipulation, since they are in fact dislodged renal stones, and (3) all stones passed spontaneously from one or both kidneys and ureters.

General Statistics.—In the series of 62 patients operated on, there were 40 males and 22 females, which is in keeping with the relative occurrence of sex as noted in cases of unilateral lithiasis. It is of interest that lithiasis should occur practically twice as often in the male as in the female. This relative proportion also holds good in other forms of chronic renal infection, and is suggestive of the infectious etiology of the condition. The average age of the patients was forty years, and the average duration of symptoms was nine years. It is unfortunate that the symptoms associated with lithiasis should be allowed to remain without treatment during so long a period. Their long duration is in a large measure responsible for the comparatively poor prognosis and the various complications so frequently seen with bilateral lithiasis.

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Localization of Pain.—The pain was localized definitely to both sides in only 14 cases, to one side in 26 cases, and in 14 cases to one side recently with a previous history of more or less definite pain on the other side. Renal pain was absent in 8 cases. The large number in which the pain was entirely or predominating on one side (64.51 per cent.) should emphasize the necessity of making a complete roentgenographic exposure of the kidneys and ureters on both sides in every case. In cases in which the pain was absent, attention was called to the possibility of nephrolithiasis by the presence of microscopic pus in the urine. In the majority of instances the kidney causing the most pain, particularly in recent years, was found at operation to be the better of the two. The kidney which in former years had caused most of the pain, with little or no pain recently, was, in the majority of instances largely destroyed, and a nephrectomy was necessary.

Location of Stones.—The location of the stones in cases in which both sides were operated on was: pelvis and calices, bilateral, 10; pelvis and calices on one side and cortex on the other, 7; pelvis and calices on one side (nephrectomy on the other), 9. When one side only was operated on the stones were found located as follows: pelvis and calices, 14; cortex, 6. There were 7 nephrectomies and 2 negative explorations. No attempt was made to localize the stones in the cases of pyonephrosis with stones, since the destruction of the kidney-tissue was so great that it was impossible to determine their exact situation. It is evident that in cases of bilateral nephrolithiasis the majority of stones are situated in the pelvis and calices, as in cases of unilateral stones. Literature on the subject would lead us to believe that stones are most commonly situated in the cortex with bilateral lithiasis, but judging from our series, such localization is less frequent. Many cortical stones described as such in the operation records were probably situated originally at the end of the calices.

Estimation of Renal Function.—Estimation of the combined renal function may, in a few cases, be of considerable aid to prognosis. Phenolsulphonephthalein is, for all practical purposes, as valuable as any functional test. When the return in two hours is only a trace or persistently very low, the prognosis is necessarily grave, and operation is usually not advisable unless there are urgent indications. We have, however, observed two patients in whom there was a persistent low phenolsulphonephthalein output, 5 and 8 per cent. respectively, several years after operation. When the phenolsulphonephthalein return is moderately low, varying from 20 per cent. to 40 per cent., I have frequently observed that it will later become much higher following operation. This is particularly true in the presence of marked infection relieved by drainage subsequent to lithotomy, and it may be inferred that toxic absorption as well as reflex irritation may be the cause of temporarily reducing the renal activity. A high return, 50 per cent. or more, is of value when clinical symptoms, or the general appearance of the patient, are suggestive of renal insufficiency. Particularly is this true in the presence of marked renal infection with toxic absorption, which frequently causes symptoms simulating advanced renal insufficiency. A high phenolsulphonephthalein return would assure the existence of one good kidney at least. The combined functional test, therefore, is of practical value only with a normal or extremely low return where the clinical appearance is doubtful.

It may be desirable to determine the comparative degree of function remaining in the two kidneys. This is not always possible but frequently may be done, (1) by the size and character of the stone, (2) by cystoscopic inspection, and (3) by a differential functional test.

Radiographic Data.—Very large stones, and more particularly large branched stones will, as a rule, cause so much tissue-destruction that nephrectomy will be necessary. Occasionally, however, the amount of secreting-tissue remaining is surprising in spite of the existence of large branched stones. The difficulties in removing such stones entirely, particularly when soft and crumbling, without too much damage to the kidney-tissue, are considerable. Single round stones, even though of large size, may cause comparatively little damage to the kidney-substance, and usually offer a better prognosis. Multiple stones, particularly when of large size and scattered throughout the kidney, usually indicate complete destruction of the kidney.

Cystoscopic Inspection.—Such inspection may be sufficient to determine the comparative functional ability. If thick pus is seen exuding occasionally, or only on pressure, the destruction of the kidney may be taken as very evident and ureteral catheterization will be unnecessary. When, however, the urine on one or both sides is clear or only moderately cloudy, a differential functional test may be of some value. As I have previously stated, pyelography may give more accurate data as to the extent of renal destruction than any other method. When the pelvis and calices are seen to be markedly dilated and irregular, it may be inferred that comparatively little healthy tissue remains. Pyelography should, however, be employed only when other methods fail, and then only when a comparative estimate of renal function is of practical value.

Differential Functional Test.—The irritation caused by stone in the kidney will usually interfere greatly with the accuracy of the estimate of renal function. It is difficult to explain the variable degree of reflex inhibition of secretion exerted by renal stone. One kidney containing a stone may have a phenolsulphonephthalein return of but 4 or 5 per cent. in fifteen minutes, while another, with a stone similar in size and position and with the same degree of infection, may have a normal return. As a rule, small stones of recent origin and without marked infection, will cause comparatively little functional disturbance. Low functional return in the presence of stone is usually succeeded by a normal phenolsulphonephthalein output after the stone has been removed. Renal functional tests can give us only an estimate of the functional activity of the kidney at the time of the examination, and not what the kidney is capable of doing under normal conditions. Too much reliance cannot, therefore, be placed on the amount of normal tissue in the kidney, as shown by the phenolsulphonephthalein test. This was well illustrated in one of our recent cases with stone in the left renal pelvis in which the differential phenolsulphonephthalein estimate from the left kidney was 7 per cent. in fifteen minutes. From this it might be inferred that considerable healthy tissue remained and a conservative operation would be indicated. At operation, however, a large abscess was found in one pole, together with several soft areas in other portions, so that a nephrectomy was clearly necessary. In several other instances in which branched stones were present the phenolsulphonephthalein return was surprisingly good, and on surgical exploration the kidney was found to be so markedly diseased in areas that a nephrectomy was obviously indicated. On the other hand, if the phenolsulphonephthalein return is zero or only a trace, it may usually be inferred that the kidney is so largely destroyed that a nephrectomy is indicated. If, however, the phenolsulphonephthalein test is only comparatively low, the functional test is of uncertain value, and unless the other data obtained by physical, cystoscopic or roentgenoscopic examination are of definite value, surgical exploration only will determine whether or not the kidney can be saved.

INDICATIONS FOR OPERATION.

After it has been decided that an operation is advisable the question arises: Which of the two kidneys should be operated on first? Rules as follows may be made:

1. In the presence of recent acute pain, repeated and continuous hemorrhage or toxic absorption from advanced renal infection referred to one kidney, that kidney must necessarily be operated on first.
2. If conditions do not necessitate this operation, the kidney with the better function should be operated on first in order to take advantage of the function remaining in the kidney on the other side during the acute stages following operation. This is particularly imperative when the stone is so situated that the drainage from the kidney with the better function may be obstructed. When the irritation, infection and danger of obstruction have been removed by the lithotomy, the other kidney may be operated on and removed if it seems advisable.
3. In cases in which the patient is in excellent physical condition, and the stones are of moderate size and advantageously situated, the renal function only slightly reduced and but little or no infection present, both stones may be removed at the same time.

PATIENTS NOT OPERATED ON.

There were 33 cases in which a very evident diagnosis of bilateral nephrolithiasis was made, and the patients were not operated on. No operation was advised, for various reasons, in 21 cases, and in 9, operation was advised but the patients did not return. Two patients were operated on for coincident malignancy in other parts of the body, and in one case the patient is awaiting operation.

Of the patients regarded as inoperable the predominating symptoms in nine were those of renal insufficiency. The history of pain was either entirely absent or of secondary importance. Our attention was called to the possibility of renal lithiasis by the presence of pus in the urine. It was found necessary to make a roentgenogram in every case in which there was pus in the urine, even if there had been no history of pain. While this necessitated a large number of negative x-ray exposures, nevertheless the frequency with which lithiasis was thus discovered made the procedure worth while. The renal insufficiency is usually the result of longstanding infection. Of particular interest is the fact that five patients in this group complained primarily of gastric symptoms which were frequently the only subjective evidence of renal insufficiency to be noted. The clinical data of renal insufficiency differ from those usually observed with the ordinary type of nephritis, in that there is no increase in blood-pressure, and little or no evidence of other circulatory disturbance. In practically every case the phenolsulphonephthalein output was markedly reduced, and in four instances the estimate was either zero or a faint trace. The stone was exceptionally large in the majority of instances, which explains the absence of acute pain, since large stones seldom obstruct urinary drainage.

In five other patients, although there was more or less clinical evidence of disturbance of renal function, the predominating symptom was that caused by marked secondary infection. Purulent urine was secreted by both kidneys and the symptoms were marked by frequent attacks of chills and fever. In three of these cases there were multiple stones of variable size, and it was evident that their removal would be followed by considerable destruction of the kidney-tissue. It is this form of bilateral nephrolithiasis which offers the poorest prognosis following operation. One of the patients with multiple large stones was allowed to return home, and three years later was reported to be in fair health. Had she been operated on and the stone removed, it is a question whether she would have lived as long. In the other two patients the stones were small and evidently secondary to well-advanced pyelonephritis, the symptoms being due to renal insufficiency as well as to infection in one; the other was markedly benefited by pelvic lavage, but because of the absence of acute symptoms, operation has been deferred.

Two patients had bilateral hydronephrosis, complicated with stones; a point of unusual interest, in that the stones were very evidently of secondary formation in a primary hydronephrosis. The stones were small and round and could scarcely be the etiologic factor of the urinary obstruction; they were evidently secondary deposits in the alkaline residual urine. Neither of these patients had secondary complication to warrant immediate operation, and when last heard from they were in fair health.

In two instances the stone was discovered accidentally. One patient complained of gastric symptoms only, and was operated on for acute duodenal ulcer. The other had symptoms of marked circulatory disturbance and hypertension. Operation was not done in the case of one patient because the degree of cardiac insufficiency made it inadvisable. One patient was discovered to be pregnant at the time of examination, and operation was deferred until after pregnancy terminated. The patient had previously gone through an uncomplicated pregnancy without symptoms of nephrolithiasis and it seemed advisable to allow the pregnancy to progress.

Two patients had been previously advised of stones in both kidneys, but they had not had symptoms of any kind in recent years. There was little or no evidence of infection in the urine and the renal function was but slightly impaired. Because of the previous history and evident tolerance of these patients, it did not seem best to remove the stones. In the presence of large or multiple stones which are not causing acute pain, suppuration or hemorrhage, the advisability of operation is questionable. The patient acquires a tolerance to the stones and will often have a better prognosis than if they are removed. If the stones are small and the function is not too greatly diminished, operation may be advisable in spite of the fact that there are no acute symptoms. If, however, there is considerable kidney-destruction, the removal of large stones causes so much damage to the kidney-tissue that death frequently results soon after operation. The possibility of stones recurring and then being situated so as to cause urinary obstruction, must also be considered.

Stone-Forming Kidneys. — A considerable group of patients, with pain referred to both kidneys, have been examined who gave a history of having passed stones repeatedly, but who at the time of examination were found to be negative. Several of these patients had passed a stone within a week or so following thorough examination, including repeated roentgenography, cystoscopy, and pyelography. With a definite history of colic referred to the kidney, in spite of negative roentgenographic and cystoscopic data, a negative diagnosis of lithiasis should be made with caution. The inability of the x-ray to show this type of stone would lead us to believe that the occurrence of bilateral lithiasis is more frequent than can be ascertained by our present methods of diagnosis. The tendency to repeated stone-formation on the part of the kidney is most interesting. That it may be due to some disturbance in metabolism is suggested by the frequency with which the formation ceases after the diet has been corrected. Several of the patients with bilateral nephrolithiasis gave a history of having passed stones. In the presence of large or multiple stones it is probable that the stones passed spontaneously have been either single stones from a group or portions of single large stones.

PATIENTS OPERATED ON.

Both kidneys were operated on in 33 patients and one only in 29 patients. Seven of the 29 patients were advised to have both kidneys operated on but they refused. In the remaining cases, either the stone was so small that it was believed that it would be passed spontaneously, or the condition of the patient did not permit of operation. Five of this group passed the stone from the other side spontaneously. The destruction of renal tissue consequent to the search and removal of very small stones is so great, that it is usually best to await further developments, providing the patient can be kept under observation. When it is found advisable to remove such stones, pyelography has proved of great aid in their identification and localization.

Nephrectomy.—In 22 patients a nephrectomy of one kidney was found advisable because of the advanced destruction of the organ. In 7 of these patients a nephrectomy alone was made; in 15 it was found necessary to do either a pelviolithotomy or nephrolithotomy on the other kidney.

POSTOPERATIVE RESULTS.

There was no operative mortality, which would indicate that patients with bilateral nephrolithiasis, when properly selected, offer no greater operative risk than with unilateral lithiasis. There were ten deaths reported subsequent to operation, all within less than a year, the majority presenting clinical evidence of renal insufficiency.

SUBSEQUENT EXAMINATION.

Twenty patients were examined at varying times following operation, and recurrences were found in 5. In correspondence with other patients, 3 gave a history of having passed stones from the kidney operated on, and 4 gave a history of severe pain, which we regarded as probably due to recurrence, thus making the total number of recurrences 12 (19.35 per cent.). A previous review of patients with unilateral lithiasis showed a total recurrence of less than 10 per cent. It is evident, therefore, that the recurrence in bilateral nephrolithiasis is fully twice as great as with unilateral lithiasis.

In the 22 cases in which it was found necessary to do a nephrectomy because of calcareous pyonephrosis, six patients died within a year following operation. The prognosis, therefore, in cases of advanced calcareous pyonephrosis on one side is very grave. Subsequent examinations were made in 5 of these patients, recurrence being noted in but 1. Later, letters were received from 3 patients, all of whom appear to be fairly well.

UNILATERAL LITHIASIS WITH DISEASE IN THE OPPOSITE KIDNEY.

There were fifteen cases of stone in one kidney and disease in the other. This group does not include a large number of cases in which an occasional pus-cell was found in the catheterized specimen from the opposite kidney. A few pus-cells are easily picked up by the ureteral catheter from the bladder-fluid and should have no practical significance, provided other cystoscopic data are negative, and the function of the kidney is found to be normal. But with definite evidence of infection and disturbance in function in the other kidney, the question may arise whether or not operation would be advisable.

Among the various conditions found in the opposite kidney, pyelonephritis to a moderate degree was found in 6 cases, pyonephrosis to such an extent that the kidney was functionless in 5, hydronephrosis in 3 and tumor in 1.

PYELONEPHRITIS IN THE OPPOSITE KIDNEY.

In the presence of pyelonephritis in the other kidney, it is advisable to ascertain as nearly as possible, its functional activity. When the functional test is normal the infection may disappear spontaneously following nephrectomy. When the function is moderately low it is advisable to institute pelvic lavage and catheter drainage, preliminary to operation. Uncomplicated pyelonephritis is usually painless. There was no pain referred to the kidney with pyelonephritis except in one instance, and the patient gave a subsequent history of having passed a small stone, with colic referred to the kidney where a pyelonephritis only had been previously diagnosed. When, therefore, a pyelonephritis on the opposite side is accompanied with pain even though the roentgenographic evidence is negative, we must suspect the possibility of stone lodged either in the ureter or kidney, and an exploration may be justifiable. Stone secondary to a chronic pyelonephritis is not a rare complication to renal infection, and was found in two of our patients. Removal of the stone, however, does not necessarily effect improvement in the pyelonephritis.

In two patients the nephritic element predominated and the infectious process seemed to be of secondary importance. The stone was removed from the cortex or end of the calyx, and it was hoped that its removal would improve the renal function. While both the patients made a good temporary recovery, on subsequent correspondence and examination no definite change was noted in the condition.

One patient had a peculiar anomaly in that he had a reduplication of both ureters and pelves. The stone was situated in the upper pelvis of the left kidney which was independent from the lower pelvis. The stone was removed by bisection of the kidney. Pyelonephritis remained in the lower pelvis and was also present in both pelves on the right side. The patient was recently examined (six years after operation) and was found in a fair degree of health in spite of the persisting pyelonephritis which seemed to be no further advanced since the previous examination.

Inflammatory destruction of the kidney containing stone was so advanced that nephrectomy was necessary in three cases; the pyelonephritic kidney was left to carry on the function. Subsequent data from two other patients lead us to believe that they are in a fair state of health. Whether or not the increased function in the remaining kidney had any therapeutic effect would be difficult to determine.

PYONEPHROSIS IN OPPOSITE KIDNEY.

With pyonephrosis in the second kidney the indications for operation may be confusing: (1) When the function of both kidneys is greatly destroyed and there are no acute complications, the condition is not operable. (2) When there is even a small amount of normal tissue remaining in the calcareous kidney and there are acute symptoms which require relief, nephrolithotomy and drainage of the infected areas are indicated; the pyonephrosis in the opposite kidney being left undisturbed. (3) When the renal stone is not causing any acute disturbance and there is either pain or evidence of systemic infection from the opposite kidney, immediate nephrectomy of the latter is indicated. In this series there were a number in the first group, which have been previously referred to; there were 2 in the second group and 3 in the third group. The prognosis in the first two groups is necessarily very poor, all patients being reported dead within a few months after operation. In the third group there is usually a marked improvement in the condition of the patient. This is usually accompanied by improvement in the function of the remaining kidney even though stone is present. In one patient, the combined function rose from 19 per cent. before operation to 40 per cent. a month after operation. The predominating symptoms in 3 of the patients were on the side in which the stone was located and in 2 patients on the side of the pyonephrosis. The discovery of stone in the latter was accidental.

HYDRONEPHROSIS IN THE OPPOSITE KIDNEY.

There were 3 patients with hydronephrosis in the opposite kidney and in 2 of these the hydronephrosis was bilateral with secondary formation of stones. From the long duration of symptoms, extending back to childhood, it would seem as though the hydronephrosis were of congenital origin, although unilateral hydronephrosis of recent origin with secondary stones is not an uncommon condition. In one patient the stones had caused so much infection that the kidney was largely destroyed and a nephrectomy was necessary. The patient, however, died three months after leaving the Clinic. In another case a pelviolithotomy was done and the patient reports some improvement with persistence of pain in both kidneys. The third patient was not operated on and reports the passage of numerous small stones and the cessation of symptoms a short time after being dismissed. It is evident, therefore, that in the presence of complicating hydronephrosis a conservative operation is indicated when possible.

TUMOR IN OPPOSITE KIDNEY.

In one patient a tumor was found involving the opposite kidney, which proved to be sarcoma. A nephrectomy was done but was only partially successful since there was infiltration in the surrounding tissues. No further operation seemed advisable.

STONE IN A SINGLE KIDNEY.

In 7 patients, with only one kidney, a stone was removed. In 5 of these nephrectomy had been done elsewhere some time previously; in the other 2 there was no evidence of the existence of the opposite kidney, and there was no clinical evidence of previous renal disease, so it may be inferred that the condition was congenital solitary kidney. In 3 of the 5 cases in which a nephrectomy had been done, this was necessary because of pyonephrosis—in 1 because of hydronephrosis, and in 1 because of acute pyelonephritis. The operations performed on the single kidney were nephrolithotomy 3, and pelviolithotomy 4. In one of the cases of nephrolithotomy the patient was operated on three times for recurring stone, extending over a period of six years. The patient died seven years after the first operation. One other patient was also operated on for repeated stone, but is now alive and well. This illustrates the great degree of tolerance which a single kidney may have for removal of recurring stone. One patient developed uremia one month after operation and died. One patient had a subsequent x-ray examination, which was negative; there were no subsequent data in the remaining three cases.

A peculiarity noted in several of the cases was the high phenolsulphonephthalein output of more than 50 per cent., in spite of the presence of a stone of considerable size in the kidney. Had the opposite kidney been functionating, the output would have been considerably lowered by the presence of the stone, and the other kidney would have been performing a correspondingly larger amount of work. In the absence of the opposite kidney, however, the entire function was forced upon the one, and the stone-irritation did not have the usual effect. There was no operative mortality in this group. Two of the patients have since been reported dead. The others are living, and to all appearances are in comparatively good health.

HORSESHOE OR FUSED KIDNEY.

Five patients were operated on when lithiasis was found in a fused or horseshoe kidney—in 4 the lithiasis was confined to one-half of the kidney, and in 1 there was a stone in both sides of the kidney. In 2 patients with unilateral involvement, secondary infection had advanced so far that bisection of the kidney was necessary. In 2 a pelviolithotomy was performed. In the case of bilateral nephrolithiasis, heminephrectomy was necessary on one side, and a stone was removed from the lower ureter by cystoscopic manipulation on the other. Three of these patients are alive from one to five years after operation.

SUMMARY.

1. In 17.2 per cent. of the patients in this series there was bilateral renal involvement. The percentage of bilateral lithiasis was 12.3.
2. Bilateral as well as unilateral lithiasis occurred twice as often in the male as in the female.
3. Pain in bilateral nephrolithiasis was unilateral in 64 per cent and absent in 8 per cent of the cases.
4. Bilateral stones were found most frequently in the pelves and calices.
5. Combined renal functional tests were of practical value only when normal or extremely low.
6. To ascertain the comparative degree of

function in the two kidneys, the functional test was of value only when it was zero or a trace, normal or excessive.

7. The functional test, x-ray examination and cystoscopic inspection may be insufficient in determining the degree of healthy renal tissue remaining, and exploration only can determine this.

8. Indications for operation: (a) The kidney with acute complications should be operated on first; (b) without acute complications the kidney with the better function should be operated on first; (c) occasionally simultaneous bilateral operation is advisable.

9. Patients may be inoperable because of renal insufficiency, secondary infection, kidney destruction or constitutional complications.

10. Patients with large bilateral stones causing no symptoms or complications are better off without operation.

11. The operative mortality in this series was zero; the total number of deaths after operation 10; these patients died less than a year following operation. The operative mortality with calcareous pyonephrosis is much greater than with other forms of bilateral lithiasis.

12. The recurrences in cases of bilateral nephrolithiasis was 20 per cent; in unilateral lithiasis, as previously reported, it was 10 per cent.

13. When there is stone in one kidney the most common forms of disease in the opposite kidney are: Pyelonephritis, pyonephrosis and hydronephrosis.

14. With unilateral lithiasis the opposite kidney may be so badly diseased that a preliminary operation may be advisable on that kidney.

15. Stone secondary to pyelonephritis, when removed, prevents further renal destruction but is not of curative value.

16. When the nephritic element predominates, removal of the stone is not of much therapeutic value.

17. A single kidney has a great degree of tolerance for repeated operation for stone.

18. In a single kidney the phenolsulphonephthalein output usually remains high in spite of the presence of an uncomplicated stone which is probably due to compensatory hypertrophy.

19. Fused or horseshoe kidneys permit of repeated operation for lithiasis which may, if necessary, include hemi-nephrectomy.

Clinical Department.

FRACTURE OF THE NECK OF THE FEMUR: REPORT OF THREE CASES.

By Charles E. Ayers, M.D., Worcester, Mass.

These three cases, occurring in people past middle age, and treated by the Whitman abduction and fixation method with such satisfactory end-result in one, and anatomical reposition of fragments in all three, shown by x-ray, leads me to report them. All three were seen shortly after the accident, and showed the typical picture of fracture of the neck of the femur, with eversion. The method used for reduction is the method described by Whitman, as follows: Patient, having been anesthetized, is placed upon the back, the head and shoulders supported by a box of sufficient size, pelvis resting on a sacral support. The disabled member is first flexed to disengage folds of capsule that may have fallen between the fragments. It is then extended and rotated inward to the normal attitude, and under traction and counter-traction the shortening is completely overcome, as demonstrated by measurements. The sound limb is then abducted to the limit to demonstrate the normal individual range and to fix the pelvis. The limb on the injured side is then slowly abducted by the assistant, while the surgeon, supporting the joint, pushes the thigh upward from beneath, to force the two fragments against the anterior part of the capsule. When the limit of abduction has been reached the capsule will be tense, thus directing the fragments, now in a horizontal plane and end to end, toward one another, and finally forcing the contact. The fracture is as if it were locked by internal splinters, and it is only necessary to hold the limb in the attitude of complete abduction and complete hyperextension by a plaster spica.

Case 1. Mr. A., aged 64 years. Occupation, stone-cutter. Oct. 25, 1916. In the evening, while coming home from work, the patient started to cross street and was struck by a news team and knocked down, striking on right hip. He was brought home and seen shortly afterwards.

Physical Examination.—Well developed and fairly nourished man, past middle age, very nervous, showing some evidence of shock. Heart action soft and slightly irregular. Right leg

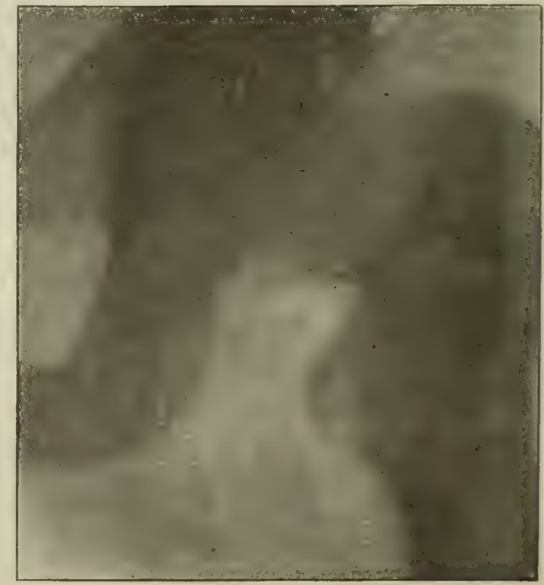

Fig. 1.—Case 1. Before reduction.

everted; slight bruise on thigh. Slightest movement caused intense pain. Measurement shows right leg three-quarters of an inch shorter than the left.

X-ray taken the following morning by Dr. A. E. O'Connell showed typical fracture of the neck of the femur. On the evening of the 26th, under ether, fracture was reduced and put up in the typical Whitman abduction position in a long plaster spica. On the fourth day patient was allowed to sit up in bed with right leg hanging over side.

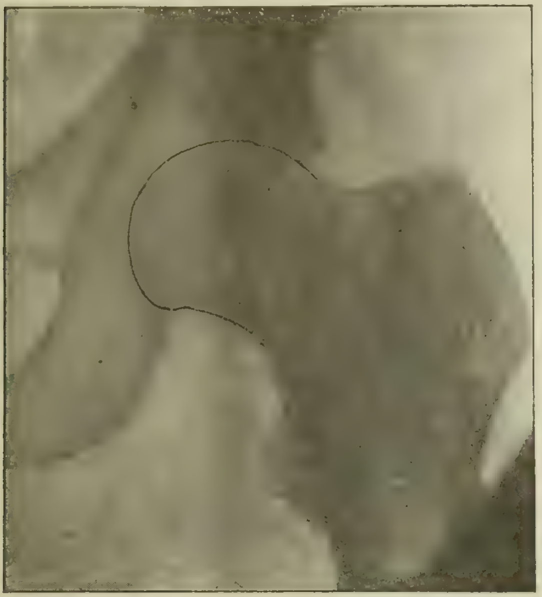

Fig. 2.—Case 1. After reduction.

On the sixth day we got him standing with weight on cast and crutch under left arm for balance. Patient walked every day from that time on.

X-ray was again taken at Dr. O'Connell's office, patient going in taxicab, and the reduction is here shown. (Fig. 2.)

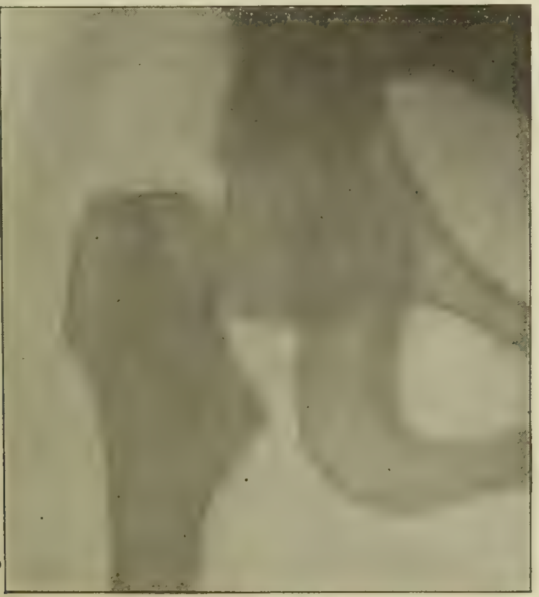

Fig. 3.—Case 2. Before reduction.

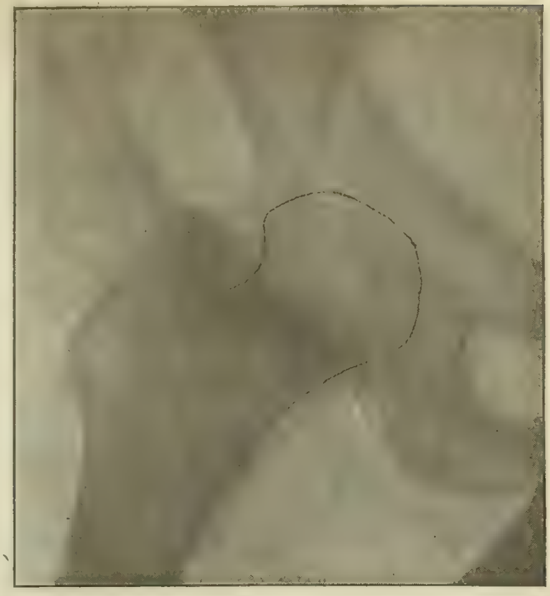

Fig. 4.—Case 2. After reduction.

Cast was renewed in eight weeks and a new one applied after four weeks more. This was cut off at the knee to allow motion. Cast was entirely removed at the end of sixteen weeks, and passive motion begun of hip and knee.

Present Condition.—Man is working in a wrench factory; walks without perceptible limp; there is no shortening. Patient is thoroughly satisfied and suffers no inconvenience.

Case 2.—Mrs. C., aged 67 years. A well developed and nourished woman, active for her years. Three days previously fell from bottom step of basement stairs, striking on left hip. Was seen by her physician and referred to Memorial Hospital. Examination of left leg shows one-half inch shortening, with eversion of limb and typical picture of fracture of the neck of the femur.

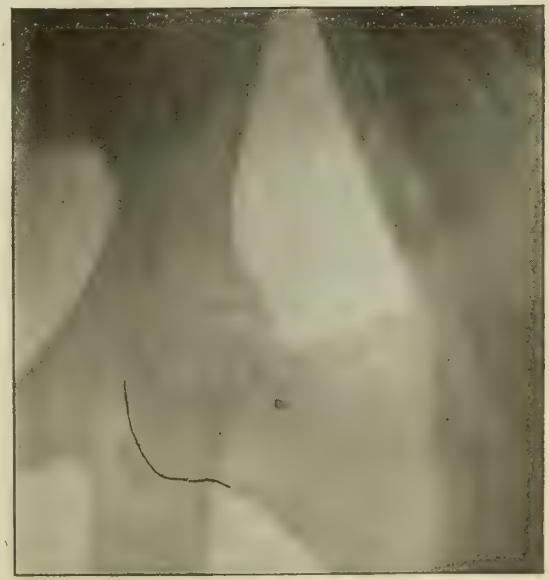

Fig. 5.—Case 3. After reduction.

X-ray (Fig. 3) shows condition. Under ether, fracture was reduced according to Whitman method, and plaster spica applied. X-ray taken two days following shows excellent reposition of fragments. Patient is still in hospital, but suffers no pain and is up every day in wheel-chair.

Case 3. Mrs. K., age 50, a well developed and nourished woman. Tripped over door-sill, falling heavily on right hip. Seen by Dr. Curley of Milford and referred to Milford Hospital. Seen in consultation with Dr. Curley three days after injury. Patient lying in bed with hip slightly flexed, abducted slightly and everted. Measurements show right leg one and one-fourth inches shorter than left. Attempted motion painful, and picture is typical of fracture of the neck of the femur.

Unfortunately the x-ray had not been installed, so we were unable to get a picture before reduction. Patient was anesthetized and fracture reduced as in previous cases and plaster spica applied. In the meantime, the x-ray apparatus having been installed, a picture was taken through the cast, showing perfect reduction. Patient is now at the hospital, sitting up in bed and in wheel-chair without any apparent discomfort.

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Society Report.

AMERICAN UROLOGICAL ASSOCIATION.

The annual meeting of the New England Branch of the American Urological Association was held at the Harvard Club of Boston on Thursday evening, November 15, 1917. Officers were elected for the ensuing year, and Drs. H. H. Howard and R. C. Wiggin were elected to membership. The program was as follows:

PRESENTATION OF SPECIMENS, INSTRUMENTS, ETC., AND REPORT OF CASES.

Dr. Quinby: I want briefly to call to your attention a subject old and yet ever new; illustrated by four cases with specimens of the commonest tumor of the kidney, the so-called hypernephroma—a very interesting tumor in spite of the fact that it is so common, because we know so very little about it pathologically. I have selected four cases illustrating, in the first place, the clinical diversity shown by kidneys bearing such tumors, and later I have just a few words to say on some of the more recent pathological ideas regarding this type of tumor.

In looking for the signs of these neoplasms we are usually taught to expect to find tumor, hematuria and pain. Very often, however, one or the other of these signs and symptoms is absent, and the diagnosis of a tumor of the kidney in such instances can be a very difficult diagnosis to make. This is illustrated by one of these cases. I will read them hastily, only mentioning the important points.

The first was a woman thirty-six years of age, who complained of a tumor of the abdomen. She had been told it was a tumor of the kidney, and she and her various physicians had known of it for nine years. Occasionally this mass was tender and gave slight discomfort. She had gone through four pregnancies, the last one being two and a half years before I saw her. Since the last pregnancy this mass had increased in size. She had lost but little weight. The diagnosis was confirmed by an injection of thorium, which showed a renal pelvis so deformed that there was hardly a suggestion of the outline of the normal calyx. The renal function, as determined by the phthalein output, was, on the left side 11%, and on the right side 10% in half an hour, illustrating the well-known fact that frequently in cases of kidney tumor the divided function is of no significance. The total function in this case for a two-hour period was 64%. The urine was entirely normal, excepting for an occasional cast. The tumor was removed. This case is typical of that group in which the tumor mass is practically the sole complaint.

The second patient complained of blood in the urine and had lost much weight. For ten months he had had recurring attacks of hematuria, during which his bladder would fill with blood. He was a cook on a coasting schooner, and so would go to a hospital where he happened to be in port, and be catheterized, and then go on; but the bleeding would recur in a few weeks. He had been catheterized in New York and at the Boston Relief Hospital only a few days before coming to the Brigham Hospital for hematuria. He presented on entrance marked strangury, a bladder distended up to the umbilicus, and complete inability to empty it of the blood clots. Instrumentation showed an exceedingly tortuous urethra with multiple strictures, so that the first thing to be done was a suprapubic drainage of the bladder under local anesthesia. This was followed in a few days by nephrectomy on the right side. A tumor mass was found attached to the kidney, which had penetrated through the capsule and was adherent to the retroperitoneal tissues. About a month later he developed a fistula in the wound, undoubtedly from local recurrence of the growth, so that, as a third operation, I made a laparotomy and found that the intestine involved was the descending portion of the duodenum. It was retroperitoneal, of course, and in a position exceedingly hard to control, on account of the friability of the tissues invaded with neoplasm. I tried to sew it up, but was unsuccessful. It was necessary to resect the pylorus and establish a posterior gastro-enterostomy. The patient died the next day. This second case is illustrative of the group in which hematuria is the prominent symptom.

In the third case the symptoms were different. There was pain in the back, but no loss of weight and no hematuria. It occurred in a woman fifty-seven years of age who had passed the menopause seven years before. She complained only of this pain and a swelling on the left side. On examination she showed a mass occupying the whole left quadrant, extending two or three inches below the umbilicus. Here the renal function did show some change. On the right, the normal side, it was 15%, whereas on the tumor side there was only 3% in a half hour. But here, again, the total phthalein was fairly reasonable, namely, 50%. The specimen shows that the tumor mass had been extensively converted into large blood cysts, and it was only after a search that I could find anything characteristic of hypernephroma tissue. This case is illustrative of that group which complain of pain.

Though tumor may be evident, it is not this for which the patient seeks relief.

The fourth case illustrates well that group in which it is hardest to come to an accurate diagnosis. These first three were comparatively easy, as they showed either pain or hematuria or a tumor. The patient was a very intelligent man who conducted a preparatory school for boys. He was sixty-two years old and had been entirely well until three weeks before entrance, when he came to the hospital complaining of a severe smarting sensation in the skin of his back below the angle of the right scapula. He said it felt as if the flesh were raw. A few days later he had the same sensation on the left back in an analogous place. The sensations came on forty or fifty times a day and lasted a few minutes. The touch of his clothing caused discomfort, but pressure and motion did not do so. About these very sensitive areas there was an ache, which at times radiated around to the front at the sternum. He also complained of pain in the right hip joint. There was no hematuria, and he presented only this area of extreme hyperesthesia and a continued slight pyrexia. In diagnosis the first thing to think of was shingles, in which the rash had not as yet come out, but that is not very often a bilateral affair, and as he was further observed it was immediately seen that the usual time for the appearance of a zoster rash had passed. The rash usually comes out much earlier than three weeks. Nine days after his entrance to the hospital we found a little microscopic blood in the urine. This led to exploration of his kidneys, and it was found that there was definite bleeding from the left side. There was never any palpable tumor, though one was suspected on account of the continued pyrexia, otherwise not to be explained. We were able, however, to show by cystoscopy a very definite though small amount of bleeding coming from the left side. Exploration of the left kidney showed a tumor, which took origin more in the cortical region of the kidney than in the other cases, and which had already made many metastases. In this instance it is interesting to note that the tumor had spread by the lymphatic channels, as well as by the venous, and had penetrated the diaphragm. The symptoms were caused by nerve-root involvement at about the sixth dorsal. Of course, extensive operation was of no avail. He steadily lost in weight and strength, and died within thirty days of the exploratory operation. Autopsy showed what I have just mentioned, that is, the nerve-root involvement which caused the pain. In this case any medical or surgical measure must come too late because the tumor caused no symptoms until the nerves were involved in metastases.

In regard to the pathology, you know there has been a considerable amount of argument advanced as to the origin of such a tumor. Dr. Wilson has put forth probably the most reasonable hypothesis regarding their origin. He says that they are not hypernephromata, but nephromata, and that the tumors take origin in the remains of the embryonic renal blastema which has not made the usual connections with the Wolffian duct, as it grows up from below to unite with the kidney tissue. The pathologists have considered them hypernephromata, following Grawitz, who based most of his claims on the fact that they contained fat and were similar in structure to the adrenal. As a matter of fact, more recent histological and chemical methods have shown that they do not contain much fat. What was considered to be fat is glycogen, and the clear transparent cells which one sees are clear because the method of fixation dissolves out the glycogen from the cell bodies.

During the investigation of tumors by the various cancer commissions all over the world, it was at one time hoped that the demonstration of mitochondria would throw some light on the question of malignancy. The theory was advanced that benign tumors had mitochondria in them and that cancer showed none. That this is far from true will be shown by the slide which I have under the microscope. For we know that these hypernephromata are always malignant but, nevertheless, their cells contain more mitochondria than any other type of tumor thus far studied. Thus the significance of such intracellular bodies is still a matter of speculation.

Dr. Phelps: I should like to report a case and show a picture of passing interest. A girl was admitted to the hospital, suffering from the ordinary symptoms of a cystitis. The cystoscope revealed what I thought was a small-sized stone. At operation we removed an ordinary rubber catheter, which, as near as we can find out, had been in the bladder for about five months. It was probably inserted to produce abortion, by some one not familiar with geography.

Dr. E. B. Young: I have had a case of somewhat the same nature as Dr. Phelps. This is a piece of gum elastic catheter which I removed from the bladder of a young woman twenty-three years old. It was inserted by the patient herself to produce abortion.

This catheter had been in the bladder for only two days, and it is remarkable for the amount of encrustation and other disturbances which it showed in that short time. The bladder was very much injected, tremendously edematous, and the folds of mucous membrane practically hid the catheter entirely, so that I was lucky to find it. The urine was smoky and foul. The patient has made a good recovery.

Dr. Gilbert Smith: I should like to mention the case of a young man at the Massachusetts General Hospital, who came in with a diagnosis of stricture. He did have a stricture, which was apparently traumatic, and he denied all venereal disease. After the stricture was cut we cystoscoped him because there were symptoms of stone and some blood, and we saw a bougie catheter coiled up in his bladder for its entire length. We removed it by the suprapubic route, under local anesthesia. Careful questioning failed to elicit any definite time when it was put in, unless it was twenty-three years before, when he said he was in the hospital for a broken leg or something like that, and had been unable to urinate, and thinks he was catheterized at that time.

Why the bougie catheter was used, I do not know, but there it was, and it was quite difficult to remove. It was not very much encrusted, but the varnish was pitted, and the thing was rough from the corrosive action of the urine.

Dr. Tenney: I wish to report an interesting case which occurred a month or two ago, when a glass clinical thermometer was removed from the bladder of a young woman seventeen years of age. The thermometer was unbroken. I had intended to bring it with me here tonight, but I forgot it. In the center is an encrustation of lime salts something like three-quarters of an inch in diameter. This thermometer was given to me by the doctor who removed it, and he pulled it out by main force.

Dr. Keefe: I should like to mention the case of a young man who had a hat pin with a black head, partly in his bladder and the rest of it in the urethra. We could not grasp it with the forceps, so I forced it down a trifle more and then pushed the point of the pin through the root of the penis. I then pulled the hat pin out, leaving the black head and reversing the direction of the penis, the head of the pin was made to emerge first from the meatus.

Paper by Dr. W. F. Braasch, Mayo Clinic:

Lithiasis with Bilateral Renal Involvement.*

DISCUSSION.

Dr. A. L. Chute: It seems perfectly hopeless to try to discuss points in a paper that has been so wonderfully presented as this one, but there are just two or three things I would like to mention very casually as they have occurred to me.

The first one is the lack of symptoms, that Dr. Braasch spoke of as causing one to think of stone in the kidney. He spoke of the finding of pus as being sufficient cause, but I do not think one should wait for pus in the urine before going over these patients with great care. There is a possibility of not seeing these stones with the most careful radiographic examination. I remember a case I spoke of at the meeting last year, which had been missed with the radiograph. The picture showed the outline of the kidney perfectly, and yet there was absolutely nothing to be seen in the line of a stone. When I cut down on that kidney I got a small, rather longish stone. To determine why we had not seen it we tried radiographing the stone in water. In the first place, it proved to be a uric acid stone. Left alone on the plate it showed a good shadow, but in water it showed absolutely nothing. The reason why x-rays were negative was that it was lying in the ureter with some urine around it. It shows that there are sometimes definite stones that we do not get by radiography, and that where symptoms point very definitely to stone in the kidney it is not sufficient to get a negative radiograph and stand by and do nothing.

Dr. Braasch spoke about leaving the stones in the kidney. To be sure, there was a pretty good reason for it every time he did it, yet it seems to me one has to have a very good reason for leaving them alone. In any case we are sounding a death-knell, so to speak, and it is only a question of time, although in some cases the death-knell would be sounded sooner if we took them out than if we left them in. On the whole, I think the best plan is to take out the stone as soon as feasible. Of course, there may occasionally be some reason why we have to put it off, but it is only a question of time when the kidney is going to be destroyed.

I want to express again my pleasure in Dr. Braasch's paper, and my great interest in it.

Dr. Keefe: I have thoroughly enjoyed listening to Dr. Braasch's lucid presentation of his subject. The vast experience which Dr. Braasch has had overwhelms me, and I do not feel that I can add anything that would be illuminating.

Dr. Trowbridge: May I simply make an allusion to what I saw three weeks ago at the Mayo Clinic? Dr. Judd was operating on a kidney, and he said to Dr. Braasch, "Is there any stone here, doctor?" Dr. Braasch said, "Yes," and I was rather amused at the uncertainty that Dr. Judd felt after exploring the kidney by making a slight incision in the pelvis. With his finger he brought out a little stone, and I felt then the great confidence that Dr. Braasch had in his cases, and how, when they had been examined, his conclusions were certainly justified.

Dr. F. H. Lahey: I have nothing to add to the paper, but in connection with Dr. Quinby's case, I would like to recall to your attention the method of treating duodenal fistulae, which occasionally occur in connection with right-sided nephrectomy, by means of an electrically driven constant suction pump. Apparently duodenal fistulae are rather unusual, but they occasionally occur following right-sided nephrectomy, and I think we should all bear in mind the possibility of closure of these fistulae by the constant suction pump. This is a pump which is worked very much like a dentist's pump, constantly keeping the fistula clear of fluid, and, particularly in small ones, allowing them to close, and bringing about a cure, which could be accomplished in no other way.

Dr. G. O. Clark: I would like to ask Dr. Braasch how many true cortical stones he has been able to demonstrate, in contradistinction to those formed in the pelvis?

Dr. Gilbert Smith: I wish to express my appreciation of Dr. Braasch's coming here, and of his very thorough presentation of his subject. Of course his experience has been very much greater than that of any one of us in regard to the matter of bilateral stones.

With reference to cases of bilateral stones that should not be operated upon, I have seen two cases that I remember of that type. One was a man who made the choice himself. He came to be cystoscoped but lost his courage. He had such huge calculi in both kidneys that I thought removing them would require nephrotomy on both sides, and would probably prove fatal.

The other case was that of a woman about fifty-five years of age who came to the out-patient clinic. She had a pyuria and symptoms of cystitis. There were large stones in both kidneys. Her total function was 5%, and we advised her not to have anything done.

The question of recurrence of the stone is very interesting. It seems to me there are certain types of cases which might be called malignant lithiasis, because if a stone is removed one year the patient comes back the next with another stone. I looked up a series at the Massachusetts General Hospital to find something about the composition of the stones in all the bilateral cases we had studied. The series was small, as there were only some half-dozen cases of bilateral stones. I found they were composed of calcium and triple phosphates, whereas a larger part of the unilateral stones and stones in the ureter were composed of oxalates. The phosphatic stones are the more rapidly growing. We have tried the effect of putting patients on a diet to prevent the formation of these malignant stones, and have given them a teaspoonful of chalk after each meal, following the work which was done at one of the United States Experiment Stations in Ohio, which proves that the output of phosphates in the urine is very much decreased if you can form insoluble salts in the intestines. I do not know whether it will prove to be any good or not. It seemed wrong to let these patients go on forming stones without doing everything possible to avoid it.

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* See Journal, page 292.

That brings me to another point, which is that it is the surgeon's duty to operate with the idea of preventing recurrence. For instance, one might have a dilated calyx which contains a stone. If you remove the stone and do nothing to the calyx, you can be sure there is retention of urine in that calyx. I think that in some cases drainage of the kidney pelvis to reduce inflammation is good. A woman we did a few months ago had a pelvis filled with fine stone and gravel. It was solidly filled up with gravel, and the walls of the pelvis were covered with incrustation. We got out all we could and then drained the pelvis with rubber tubes. Of course she had a fistula, lasting for three weeks. I then put in a ureteral catheter. The fistula closed at once, and she went home with perfectly clear urine from that kidney.

In preventing the recurrence of stone after pyelotomy, there is not infrequently a pyelitis resulting, even if there was none before operation. In some cases, if you let the pyelitis run, the inflammation will favor the formation of stone in the future. One should try to prevent that by seeing that the pyelitis is cleaned up, if necessary washing out the kidney pelvis with silver nitrate a number of times to clean it out. In a couple of cases I did this, and the urine cleared up absolutely.

I want to again thank Dr. Braasch for the pleasure he has given us all.

Dr. L'Esperance: I wish at this time to thank Dr. Braasch for his very interesting paper. This interests me particularly because a year ago I passed a renal stone from my right kidney, and naturally what interests me greatly is the matter of recurrence. This stone was absolutely symptomless until I received a slight shock from a fall resulting from stubbing my toe. Following it, I accidentally noticed a hematuria, which continued for four months. It was impossible to demonstrate the presence of a stone by x-ray, until Dr. Dodd took pictures on a new machine recently purchased, and then only a faint shadow could be seen. In consultation with Dr. Hugh Cabot, it was agreed that, owing to the size of this renal stone, it would be passed without operation. By cystoscopic examination with the ureteral catheter in place, the position of the stone was shown to be about one inch from the orifice. Following several attacks of sharp pain, the stone was successfully passed through the urethra.

At the present time recurrence of the stone is what interests me mostly.

Dr. Quinby: In estimating the ability of the patient to withstand operation, I do not doubt that Dr. Braasch uses other methods than phthalein, but I want to make a plea for the use of blood urea estimation in doubtful cases, as being more accurate in some instances than the phthalein. It is a more delicate test. The first signs of improvement, as also the signs of failing renal function, are most delicately shown by the nitrogen content of the systemic blood stream in cases where both kidneys are involved. In unilateral affections of the kidney, when the opposite kidney is doing its work well, of course the blood urea estimations would be normal.

There is one other point. I want to go on record as agreeing heartily with what Dr. Smith has just said. The formation of stone rests on two main factors: one is infection, and the second, stasis in the kidney or in the bladder. We should not only combat the infection, but also, wherever possible, surgically try to put the kidney in a condition where it will drain properly, because stasis is just as important as infection in the causation of stone formation.

Dr. Braasch (closing): I wish to thank the members of the Society for their generous consideration of so long a presentation of statistics.

As to the existence of true cortical stones, I believe that they occur exceptionally, and then only secondarily to a localized area of necrosis. The majority of so-called cortical stones have their origin in the minor calices, and as they enlarge they invade the surrounding cortex.

The type of stone which is most frequently missed by the radiogram is the very thin, flat stone. If in taking the x-ray, the edge of the stone is exposed to the radiogram, it may easily be missed entirely. As Dr. Chute stated, we are occasionally justified in surgical exploration of the kidney where the patient's history and other data are strongly suggestive of stone, in spite of a negative radiogram. However, this should be done only in exceptional cases, and certainly not as a routine procedure.

In regard to the value of the blood-urea estimate, I have not discussed this because we have not employed it sufficiently to give any final opinion. After all, however, the practical value of all renal functional tests is not very great—so far as helping us to determine whether or not we shall operate is concerned. Our surgical judgment should depend upon the data derived from the radiogram, cystoscope, and physical examination—not upon the functional test. Where, however, the clinical examination leaves us in doubt as to the renal function, which occurs only in a very small proportion of cases, the functional tests may be of value. This is particularly true in the presence of marked renal infection, where toxemia of absorption leaves the patient in such a condition that he appears to be much sicker than he really is. The extremes of phthalein return alone are of practical value. If, on repeated tests, only a very low phthalein return (say 10% or less) is obtained, the advisability of operation in the absence of acute complications is questionable. A marked degree of blood-urea retention in conjunction with an extremely low phthalein return would be an additional factor against operating. Providing that there are definite surgical indications, I do not believe that a high blood-urea retention alone should render the case inoperable.

Book Reviews.

Operative Gynecology. By Harry Sturgeon Crossen, M.D., F.A.C.S., Associate in Gynecology, Washington University Medical School, and Associate Gynecologist to the Barnes Hospital; Gynecologist to St. Luke's Hospital, Missouri Baptist Sanitarium, and St. Louis Mullanphy Hospital; Fellow of the American Gynecological Society, and of the American Association of Obstetricians and Gynecologists. Seven hundred and seventy original illustrations. St. Louis: C. V. Mosby Company.

The endeavor of the author has been to present the operative treatment of gynecological disease fully, in all its bearings. He says: "The time is ripe for a systematic presentation of the various operative procedures available for the treatment of each gynecological lesion. Gynecologic surgery is entering a new stage of development. The past may be designated the period of invention of methods. To such an extent has this been carried out that for the treatment of uterine displacement alone more than one hundred operative procedures have been devised. The new stage of development may be designated the period of adaptation of operative methods to the exact pathological conditions present in the individual patient. The period of development is as important as the preceding one, perhaps more so when considered from the standpoint of lasting benefit to the patient." The details of general surgical technic and operations on the adjacent organs are omitted.

Within these narrowed limits the subject is covered in nineteen chapters. The plan of the author has been well carried out, and the handling of certain topics leaves little to be desired. Retrodisplacements of the uterus and prolapse of the uterus and bladder are treated at some length, and the catalogue of operative procedures for retrodisplacements of the uterus is exhaustive. The chapter on chronic inversion of the uterus shows the book at its best. Relaxations of the pelvic floor are fully discussed, but in the treatment of vesicovaginal fistulas one misses references to certain well-known and long-tried methods of exposure, as well as other resources of plastic surgery.

The subjects of inflammatory diseases and new growths are well covered, but the value of bisection in pelvic surgery is apparently not fully appreciated. The method of applying the Wertheim parametrial clamps, as shown in Figs. 453 and 454, is not that used by Wertheim, and is distinctly less advantageous. The ureter should be freed and displaced laterally, and the clamps passed under the ureter from the median side. The Percy heat method of treatment of cancer of the uterus is well described and its value properly estimated.

Two timely chapters are on gynecological surgery in nervous patients, and on medicolegal aspects. These serve as indicating points which deserve attention, rather, as complete discussions.

The balance is not always well preserved. For example, the exhaustive list of operations for retrodisplacements of the uterus would better be relegated to a monograph or to a history of gynecology. The space devoted to ovarian transplantation is too great for the actual, though perhaps not for the potential value of the procedure. The list of operations at which a foreign body has been left in the abdominal cavity may not be too long to emphasize the danger of such an accident, yet it seems out of place in this book. The arrangement of the text might be improved by considering technic or technique and indications in a uniform order.

The book, in addition to these minor faults, has certain major virtues, and is to be highly recommended. The descriptions are clear and the illustrations are abundant, well-selected and adequate. In matters of opinion, the surgical judgment of the author is sound.

The press-work represents a marked advance from the author's medical gynecology issued by the same publishers.

Candy Medication. By Bernard Hantus, M.D., Professor of Pharmacology and Therapeutics, University of Illinois. St. Louis: C. V. Mosby Company.

This monograph, presumably the only book on the subject thus far published in any language, aims to present the author's method of medication through the medium of candy tablets, which he believes particularly effective in the administration of drugs to children. He describes the method, and machine required for making these tablets, and the uses to which they may be applied. He enumerates the drugs which may be administered by this method, and describes the method of constructing formulae for the manufacture of the tablets. More than half the book consists of a series of sixty-six prescriptions arranged in a formulary with full directions for the manufacture of each. The volume closes with an index and a series of nine references to previous writings on this subject by the author, and by Sawyer, Fuller, Schleimer, Wood and Lloyd. The subject is one of interest, and its practicability would seem to make it of value in the pharmacology and therapeusis of pediatrics.

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CENTRALIZATION OF AUTHORITY VERSUS UNPAID BOARDS OF TRUSTEES.

In these war times the atmosphere of strict military discipline and the centralization of all authority is very much in the air. As far as a fighting force like an army is concerned, centralization and the placing of authority in the hands of a few capable persons is much to be desired. It does not necessarily follow, however, that methods which for many years before the war have proved their usefulness and efficacy should be cast to one side and entirely done away with in order to conform with present military methods. There is a very present danger of this being done, however, in certain important instances, unless the medical profession protests against such an unwise procedure.

Take, for example, the question of the unpaid boards and commissions, which for many, many years have, in Massachusetts, demonstrated their value. There has been criticism in the past of the work of such boards, whether they have been in charge of institutions for the insane, for the tuberculous, for delinquents, or others; but, notwithstanding these criticisms, and notwithstanding attempts to prove that this method of handling affairs is inefficient and wasteful, the fact remains that these unpaid boards of trustees and the work they are doing have stood the test of time and stood it well; the fact remains that our state institutions, whether for the insane, the tuberculous, or delinquents, stand among the best in this country.

The report of a Recess Committee on Administration and Finance, appointed to investigate and report on the question of the consolidation of various boards and commissions and the doing away with certain unpaid boards of trustees, is before the Legislature for consideration. Among others, it recommends that the Board of Trustees of Hospitals for Consumptives be transferred to the State Department of Health. Another bill, emanating from New Bedford, based, we believe, on personal grounds more than anything else, recommends the abolition of the Board of Trustees of Hospitals for Consumptives, and that its duties be transferred to a special bureau of the State Department of Health. The chairman of the Board of Trustees of Hospitals for Consumptives, and the other trustees themselves, would heartily welcome any such change as this, which would relieve them of many irksome duties, could it be demonstrated that such a change would benefit the cause of preventing tuberculosis in Massachusetts and the welfare of our unfortunate consumptives. We do not believe, however, plausible as this scheme sounds, that this can be demonstrated. We do not feel that this Board needs any defense; the work it has accomplished during the ten years of its existence in the prevention of tuberculosis in this State speaks for itself. It is well to bear in mind certain facts concerning the progress that has been made in fighting tuberculosis in Massachusetts during the past ten years. It, likewise, should be borne in mind that the State Department of Health has, of its own accord, and wisely, left the tuberculosis problem, to a very large extent, in the hands of the Board of Trustees of Hospitals for Consumptives, believing that by so doing it was in good hands.

When the Board above mentioned, of which the late Dr. Arthur T. Cabot was chairman and the guiding mind until his death, took hold of the situation there was one state sanatorium, at Rutland, with 350 beds. The number of other beds in the state of Massachusetts was very limited. Since that time the state sanatoria at North Reading, Lakeville and Westfield have been built, bringing the total number of beds in our state sanatoria up to well over 1000, while, in addition, under the direct supervision of the Board of Trustees of Hospitals for Consumptives, local tuberculosis hospitals have been constructed, and at the present time county hospitals are being built, which will bring the total number of beds to well over 4000. We believe that the proportion of beds to the population is as great in Massachusetts, if not greater, than any other State in the country. The death rate from tuberculosis per 100,000 population in Massachusetts in 1907 was 150.6. The present death rate is 119.5. The weekly per capita cost at the state sanatoria up to the present war was in the neighborhood of $9.00. It is naturally more at the present time. We believe, however, that this weekly per capita cost is as low, if not lower, than that of other institutions outside of Massachusetts. Despite the fact that the state sanatoria are not limited to incipient cases, we believe that the results of treatment will compare favorably with those of other state sanatoria elsewhere. We believe that it would be impossible to combine in any single-headed commissioner, of no matter how high a standard, the quality, skill, and faithfulness to its aims and ideals that is now to be found in the present board of trustees, while from the question of dollars and cents alone, it is manifest that the cost of a special commissioner, necessarily at a high salary, and of the various deputies which he would have to have, will be infinitely greater than the expense of the present unpaid board. Not only do we believe it unwise to make such a radical change as this at the present time, but, also, we believe that it should be clearly demonstrated that such a change would be beneficial. This has yet to be done.

* * *

STATE QUOTAS OF BABIES TO BE SAVED DURING CHILDREN'S YEAR.

The Children's Bureau of the United States Department of Labor announced on February 25 the number of lives each state is asked to save in the campaign to save 100,000 babies and young children during Children's Year, beginning April 6. Announcement of the purpose to initiate such a movement was made some time ago by the Children's Bureau and the Child-Welfare Department of the Woman's Committee of the Council of National Defense, and the response, which has surpassed all expectations, indicates that efforts to promote the health and welfare of children are to be more vigorous this year than ever before.

The saving of 100,000 lives of children under five is only one part of the program for the welfare of 30,000,000 children under fifteen in this country. It is realized by all concerned that the standards of child protection must not be relaxed during war time, and the United States is expected to profit by the experience of other warring countries, where the importance of safeguarding childhood is emphasized as never before.

The movement to save 100,000 lives of babies and young children in the United States during the second year of the war is to be begun by a National Weighing and Measuring Test beginning April 6, the anniversary of the declaration of war by this country. In announcing the quotas the Children's Bureau said:

"In order that each State may feel responsible for a definite number of lives to be saved, quotas have been assigned to the various States, the apportionment being made on the basis of the population under five according to the 1910 census. This, of course, cannot take account of the varying death rates in the different States where death rates are known.

In about half the States of the Country, comprising nearly one-third the population, the registration of deaths was not sufficiently complete to warrant their inclusion in the registration area when the latest reports were published. The registration of births is seriously deficient in a still larger number of States. For that reason the apportionment of quotas of infant lives to be saved could not be made upon the basis of the infant mortality rate, which is based on the number of deaths under one year and the number of recorded births. Thus the only basis for the assignment of quotas uniformly applicable to all the States is the population as shown by the Federal census. As the effort for the hundred thousand lives applies to the specially hazardous period of life under five years of age, the quotas are calculated upon the basis of the population under five.

In making the apportionment on this basis it was realized that a high mark is thus set for

States in which the death rate among young children is already low. On the other hand, the mark set may be low for some States where the child death rate is excessively high. It does not appear to be possible to avoid some situations of this kind by any method of apportionment that could be devised with the data now at hand. If the registration of births and deaths were complete in all the States, an apportionment of quotas of the 100,000 lives to be saved by the various States could be made upon a different basis."

Plans for the celebration of Children's Year, of which the saving of 100,000 lives is one feature, are being developed by the Children's Bureau in coöperation with the Child-Welfare Department of the Woman's Committee of the Council of National Defense. The safeguarding and protection of children is looked upon as a patriotic duty in view of the unavoidable wastage of human life incident to war. It is expected that the 5000 or more local committees of the Child-Welfare Department of the Woman's Committee will be able to carry the campaign to every community in the United States. This is looked upon as essential to the success of the movement, for in the last analysis, every community must save its own babies if they are to be saved at all. State and Federal agencies, either official or voluntary, can make plans and offer suggestions, but each community must bear its full share of responsibility in making the campaign a success.

MEDICAL NOTES.

The Brattleboro Mutual Aid Association.—The tenth annual report of the Brattleboro Mutual Aid Association for the year ended October 1, 1917, records that 167 maternity cases were cared for during the year. The maternity nurse made 365 prenatal visits. A clinic was held at the Association Home, where 41 children under five years of age were examined by the physicians and dentists of the town, each one giving his services for one hour or more. Those requiring attention were later visited by a nurse and advised as to their care. The great demand for trained attendants has impelled the Association to establish a school called the Thompson School for Training Attendants in Household Nursing. Women who enter this school are given a standardized training to work for household nursing organizations under graduate nurse supervision. These attendants or household nurses supplement the work of the graduate nurse and take the place of the second when two are required. They also help to care for the children and the home when necessary during the mother's illness.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending Feb. 16, 1917, the number of deaths reported was 332, against 287 last year, with a rate of 22.07, against 19.37 last year. There were 45 deaths under one year of age, against 45 last year.

Ths number of cases of principal reportable diseases were: diphtheria, 76; scarlet fever, 32; measles, 176; whooping cough, 52; typhoid fever, 2; tuberculosis, 59.

Included in the above were the following cases of non-residents: diphtheria, 7; scarlet fever, 9; tuberculosis, 10.

Total deaths from these diseases were: diphtheria, 4; scarlet fever, 1; measles, 1; whooping cough, 2; typhoid fever, 1; tuberculosis, 22.

Included in the above were the following non-residents: diphtheria, 1; tuberculosis, 2.

Meeting on War Surgery.—A meeting of the Boston Medical Library in conjunction with the Suffolk District Medical Society was held in the Library on February 13, 1918. The general subject of the evening was War Surgery. The speakers were Col. Dercle of the French Mission and Maj. Edward Archibald of Montreal.

Springfield Academy of Medicine.—The February meeting of the Springfield Academy of Medicine was held on February 12. Dr. William P. Graves of Boston spoke on "Ovarian Organotherapy." Dr. Smith began his course on "Circulatory Disease" on February 15.

Effect of Cold Weather on Death Rates.—The published figures of the Boston Board of Health show that for the month of January the death rate was not increased by the severe weather, but was better than usual. The rate was nearly 8% less than last year, and many of the communicable diseases showed a marked decrease.

"The only death statistics which show an increase for January are those for the babies. It is generally believed that the cold and possibly the high prices of food are responsible.

The number of deaths of babies under one year in January, 1918, was 188, as compared with 167 in January, 1917. The month of December, 1917, however, showed only 162 deaths, as compared with 176 in December, 1916. The number of deaths of persons over 65, who usually suffer severely from cold, was 416 in January, 1918, against 502 in January, 1917. The total number of deaths in January of this year was 1264. Last January the figures were 1365.

INSANITY IN MASSACHUSETTS.—The annual report of the Massachusetts Commission on Mental Diseases for the year ended November 30, 1916, states that the whole number of mentally affected persons under its care October 1, 1916, was 18,718, being 1 such person to every 201 of the estimated population of the State. Of this number, 15,048, or 80%, were insane; 2885, or 15%, feeble-minded; and 670, or 3%, epileptic (sane). Their increase for the year was 581. The increase of such persons under public care for the year was 575; their average annual increase for the last five years, 591. The causes of insanity assigned by the physicians of the hospitals were physical in 2036, or 63.93%; mental in 132, or 4.14%; unknown in 997, or 31.30%; and not insane in 20, or .63%.

* * *

Miscellany.

HENRY MAUDSLEY, M.D. LOND., F.R.C.P. LOND., LL.D. EDIN.

THE *Lancet* has recently published an extensive obituary notice of the late Dr. Henry Maudsley, one of the foremost thinkers and writers in the world on mental physiology and pathology, who died at Bushey Heath, on January 23, in his eighty-third year. The following extracts may serve to give an adequate idea of his life, activities, and contributions to science:

"The third son of the late Thomas Maudsley, Henry Maudsley was born at Rome, near Settle, Yorkshire, in 1835, and was educated at Giggleswick School and at University College, London. He graduated in 1856 M.B. of the University of London, winning the gold medal in surgery, and proceeded to the M.D. degree in the following year. His early bias was in favour of surgery, but one of his first appointments was that of resident physician to the Manchester Royal Lunatic Hospital, which post he held from 1859 to 1862, so that his acquaintance with his special subject was literally as long as his long working life. In 1864, having come to London, he was appointed a physician to the West London Hospital, and thus obtained the chance of acquiring familiarity with general pathology. In 1869 (the year in which he was made a Fellow of the Royal College of Physicians of London) he became professor of medical jurisprudence at University College, a post which he held for ten years, when he resigned in order to concentrate entirely upon the responsibilities of a large and important practice as a psychiatrist.

His reputation grew as much, however, from his literary as from his practical work. As far back as 1862 he had been appointed editor of *Mental Science,* a journal which he ably conducted for nearly 20 years. His first original contribution to the literature, which he so enriched, of mental processes in health and disease, was comprised in his Goulstonian lectures on the 'Relations between Body and Mind, and between Mental and Other Diseases of the Nervous System'; these were delivered and published in 1870. In 1874 he wrote 'Responsibility in Mental Disease,' which has gone through five editions; in 1876, 'Physiology of Mind,' and in 1879, 'Pathology of Mind,' both of which have passed through two editions. In 1883 he published 'Body and Will,' and in 1887 'Natural Causes and Supernatural Seemings,' a wonderfully able book, whose materialistic views in certain places gave considerable shocks to the orthodox. In 1902 'Life in Mind and Conduct' appeared; in 1903, 'Studies of Organic and Human Nature'; and in 1908, 'Heredity, Variation and Genius.' His latest work, 'Organic to Human,' appealed mainly to the scientific student of psychology and sociology, whether without or within the ranks of the medical profession. It must indeed be considered chiefly as an important contribution to the still vexed controversy between the warring schools of 'materialists' or 'mechanists' on the one hand and of 'vitalists' or 'spiritualists' on the other. It fixes his place as a scientific thinker, for justly preëminent though he was as an authority on the subject of insanity, and much as his other work owes to his practical knowledge and experience in this special study, his most enduring title to fame will be that of the scientific philosopher who in his day and generation consistently and persistently upheld the principle of the unity of the human organism and its continuity with the rest of nature's processes. From his literary work alone he gained a wide reputation; he was an honorary member of the Medico-Psychological Society of Paris, of the Imperial Society of Physics, Vienna, and of the Medico-Legal Society of New

York, and his teachings received practical endorsement in all parts of the scientific world.

In February, 1908, Dr. Maudsley, who had done so much by his writings for the advancement of the study of psychiatry, made the munificent offer of £30,000 to the London County Council to provide a hospital for the early treatment of cases of acute mental disorder, whereat scientific research might be pursued and an educational institution provided for medical students. He had already communicated to Dr. F. W. Mott his intention, and Dr. Mott pointed out to him the desirability of associating such a hospital with the University of London and privately communicated this wish of Dr. Maudsley to the chairman of the Asylums Committee. Dr. Maudsley's generous proposal was made officially to Mr. H. P. Harris, then chairman of the London County Council, and in a letter to Mr. Harris, dated Feb. 14, 1908, he entered clearly into the motives behind his public beneficence. He said that as a physician who had been engaged in the study and treatment of mental diseases for more than half a century he had been deeply impressed with the necessity of a hospital whose main object should be the early treatment of cases of acute mental disorder, with the view, so far as possible, of obviating the necessity of sending them to the county asylums; the promotion of exact scientific research into the causes and pathology of insanity, with the hope that much may yet be done for its prevention and successful treatment; and the provision of an educational institution which should offer to medical students the opportunities of getting good clinical instruction in a class of diseases of which under existing conditions it is not easy for them to obtain a competent knowledge.

Dr. Maudsley's gift of £30,000, which had the inspiration we have just set out, having been accepted by the London County Council, a site was eventually found at Denmark Hill. On the outbreak of war the hospital was hastily completed, and is now used as a military hospital for the treatment of war psycho-neurosis, and whatever may be its future career, posterity will regard its originator as one who has done much to break down the artificial barriers which for so many decades separated mental from physical disease:

We close this notice of a remarkable man with a few words of personal reminiscence from Colonel Mott. He writes:

'I always much enjoyed my visits to Bushey Heath as I profited much by conversing with a man who was a broad-minded philosopher with a remarkable intellect and memory. In fact, he retained all these faculties to the very end. I conversed with him only the Sunday before he died. He took a great interest in the hospital which bears his name and which owes its existence to his great generosity. He was especially pleased when I told him that a number of American officers had been studying the psychoneuroses under my direction. He showed a special interest in my personal affairs. He told me that he did not wish to live any longer; at the same time, when I said the sun would shine again and I hoped he would live to see what had been done by the soldiers in making the gardens of the Maudsley Hospital fruitful, he brightened up. For he thoroughly agreed with me that employment was the best mode of treatment in convalescence of these cases. I often had propositions to make to him regarding the hospital and grounds, the pathological laboratory, and the research work carried on there, and he would criticize my remarks with much force and scientific acumen, partly, I think, to draw me out, partly it was his nature not to accept any statement without examination. In discussing general topics, such as politics and social problems, one learnt to respect greatly his shrewdness, wisdom, and knowledge of human nature and the motives of men. He used often to say to me, "You are an optimist," and I retorted, "You are a pessimist." When I got to know him intimately I found an extraordinarily kindly nature beneath what at first might appear to have been a satirical and cynical attitude towards mankind generally. This was no doubt due to the fact that he hated sham, humbug, and vainglorious people of all grades, religion and professions. His wife was the youngest daughter of John Conolly, of Hanwell, a great pioneer in lunacy reform. A few years ago he contributed a sum of money to commemorate Conolly's name at Hanwell. I think his wife, who was a very sweet woman, must have helped him with the idea of building a hospital. He told me that she was his "foolometer"; by that he meant he read over his MS. to her and confided in her his plans. Dr. Maudsley had the greatest mind of anybody that I have had opportunity of knowing intimately. His knowledge was not only profound and extensive, but accurate. He was a great Shakespearian scholar, and this is revealed in his writings; and he would quote passages not only from the Bible and Shakespeare, but from most of the great authors and poets, so that after dining and spending the evening with him, I would come away sometimes humbled, but always mentally refreshed. He had a remarkable knowledge of the works of the great philosophers, ancient and modern, and he frequently told me that he had a profound admiration for the philosophy of Spinozà. In his early days he was apprenticed to Clover at University College Hospital, and it was interesting to hear his opinion of the members of the staff of the hospital in his time. He was a good bowls player, and later in life he attended Lord's cricket ground pretty regularly, and I was surprised when I first met him to find this great philosopher knew far more about the style of play, the capacity for run-getting and bowling of well-known cricketers than I did. It is said that as a student he never seemed to work, and yet he carried off all the prizes at University College Hospital.' "

RETIREMENT OF GENERAL KEOGH.

THE British War Office has recently issued a communication announcing the retirement of Surgeon-General Sir Alfred Keogh from the position of Director-General of the British Army Medical Service:

"It is with great regret that the Secretary of State for War has decided that the time has come when Surgeon-General Sir Alfred Keogh, G.C.B., M.D., F.R.C.P., Director-General of Army Medical Services, must be permitted to resume his duties as General Executive Officer to the Imperial College of Science and Technology, and he will be replaced at the War Office from March 1 next by Colonel T. H. J. C. Goodwin, C.M.G., D.S.O., Royal Army Medical Corps, until recently the Assistant Director of Medical Services to the British Recruiting Mission in America, who will be appointed Acting Director-General of Army Medical Services.

Sir Alfred Keogh's services were placed by the Governors of the Imperial College of Science and Technology at the disposal of the War Office at the beginning of the war, and although during the last three years they have on several occasions requested that he should return to his former duties, owing to the development of matters of great national urgency which are delayed by his absence, it has not hitherto been possible to spare him.

It is very largely due to Sir A. Keogh's intimate knowledge and grasp of all matters connected with the Army Medical Services and the medical profession generally that the medical needs of the army have been met to the fullest extent during the war, and he has been able to secure the assistance and advice of various committees of eminent consultants, which it is hoped will continue to be at the disposal of his successor."

Commenting on General Keogh's retirement and the appointment of his successor, the *British Medical Journal* writes in part as follows:

"Sir Alfred Keogh was born in 1857 and received his professional education at Queen's College, Cork, and Guy's Hospital, London. He took the degrees of M.D. and M.S. at the Royal University of Ireland in 1878. After holding the appointment of house-physician at the Brompton Consumption Hospital he entered the medical department of the army in 1879, coming out second of nearly seventy successful candidates. This was the first batch of officers commissioned under the Warrant of 1879. For a considerable time before that the discontent in the service had been so acute that there had been the greatest difficulty in getting suitable men to come forward. At Netley Sir Alfred Keogh won the Martin Memorial Gold Medal and the Herbert Prize, and passed out with the highest total of marks of all the candidates—army, Indian, and naval. His first tour of foreign service was in Bermuda, whence he proceeded to India. On his return he was on duty at the Royal Arsenal, Woolwich, for five years; during that period he gained a large surgical experience. On completion of this appointment in the beginning of 1894 he was sent to India, where he served in the Madras Presidency; later he was transferred to Barrackpore, near Calcutta, where he was in charge of the Military Hospital. He was also civil surgeon there, and in that capacity had large opportunities of ordinary professional work among the operatives in the factories and civilian population. He returned to England in 1899, and in November went to South Africa as Secretary and Registrar of No. 3 General Hospital, which was at Rondebosch, near Capetown, in the early part of the war. When Bloemfontein was taken hospital accommodation was required on the lines of communication, and Colonel Keogh was sent to Springfontein with half of No. 3 General Hospital, and while there he was for a short time principal medical officer of the lines of communication from Bloemfontein to Norval's Pont.

He was soon transferred to Pretoria to take charge of No. 2 General Hospital, which he raised to a high state of efficiency. In November, 1900, it had 1000 beds, and this number was maintained till the following March. He was also Senior Medical Officer of 'Howitzer Camp,' which included the Langman Hospital, and direction of the sanitation of the eastern outskirts of Pretoria. At the end of 1900 he contracted enteric fever, and was invalided home in February, 1901. He was mentioned in Lord Roberts's first dispatch, received the decoration of C.B., and was specially advanced from the lower to the higher rate of Lieutenant-Colonel.

When the reform of the Medical Service of the Army was undertaken, he was invited to join Mr. Brodrick's Reorganization Committee. His work as a member of that was of the highest value. He was appointed Deputy Director-General from January 1, 1902.

On January 1, 1905, he was appointed Director-General, and retained that office until 1910, when he was appointed Rector of the Imperial College of Science and Technology, South Kensington. During his first period of office as Director-General the medical service of the Territorial Force was organized, and the system of Territorial hospitals with staffs drawn from the civil hospitals in the various localities was brought into existence.

Sir Alfred Keogh retires from the office of D.G., A.M.S., leaving behind him the reputation of one of the greatest organizers and administrators the army has produced. It was not an accidental coincidence that he and Sir William Robertson received the G.C.B. on the same day about a year ago. When he took up the office for the second time, in October, 1914, he knew that he had undertaken a task beset with difficulties. He succeeded in carrying day after day a burden of responsibility and labour which only a man of his energy, enthusiasm, and mental calibre could carry. He had to meet at once the medical needs—which then seemed immense—of the new armies of men who voluntarily responded to Kitchener's appeal. The response came in a manner redounding to the everlasting honour of the British medical profession. The response must have heartened Sir Alfred Keogh in those difficult early days after Antwerp and the first battle of Ypres. It would have been made whoever had been in his place, but it was made more readily and with more confidence because he was there. Men at such moments do not stop to analyze the springs of their conduct, but there can be little doubt that the spontaneity of the response was in part due to the feeling that Sir Alfred Keogh was one of us; that through his long years of military administration he had never forgotten that he was a doctor first and a soldier afterwards. He has said this or something like it very often, and his record in the service would stand as evidence had he never said it. The work of the enlarged Army Medical Service, of which he has had the central direction, has been greatly successful in the prevention of disease, in the treatment of the wounded and sick, and in their transport and hospitalization. The first urgent problem of the war on the Western front was raised by the frequency of wound infections of extraordinary severity and of types which, if not new, were unknown except by name to modern surgeons. Then appeared at once the wisdom of the appointment of consulting surgeons, physicians, and pathologists, and the establishment of clinical and research laboratories under the direction of skilled men of the younger school. In all this Sir Alfred Keogh has shown a quality which distinguishes a great from a good administrator, a quality which he shares with his distinguished colleague in France, Sir Arthur Sloggett, of encouraging men of capacity, in the words of Harvey, 'ever to search out and study the secrets of nature' at the bedside or in the laboratory. In the course of his multifarious work of the last three and a half years Sir Alfred Keogh has had to touch the fates of ten thousand medical men of all ages, dispositions, and clinical acquirements. That the Army Medical Service has during these times always succeeded in using its civilian recruits to the best purpose would be to claim too much. It is not in mortals to avoid mistakes, but we are quite sure that throughout it all the retiring Director-General has been inspired by a real appreciation of the importance of scientific methods, by a genuine love of his profession, and a whole-hearted desire to do the best possible for the armies and for the sick and wounded. In choosing Sir Alfred Keogh's successor, the precedent recently created in other branches of the army, of looking to the younger men, has been followed. Colonel Goodwin, who entered the R.A.M.C., in 1893, is not yet 47. He served with distinction in frontier expeditions in India and has won golden opinions in this war, where he served in France from the earliest stage, as more recently in America, to which country he proceeded as a member of Mr. Balfour's mission last spring. He has a difficult succession; we wish him every success in the high office to which he is called."

MEDICAL MATTERS IN MESOPOTAMIA.

THE *British Medical Journal* has recently published the following extract, relative to medical matters in Mesopotamia, from the last dispatch of the late Lieutenant-General Sir Stanley Maude:

"During the five months ending April there had been continuous fighting, and during that month the enemy was driven back on divergent lines with the capture of 3000 prisoners, 17 guns, and a considerable quantity of rolling stock and booty. All objectives had been secured, but the increasing heat rendered it necessary to redistribute the troops for the hot weather, and to make every possible provision to guard against the trying hot period approaching. The bulk of the troops were withdrawn into reserve and distributed in suitable camps along the river banks, where they could obtain the benefit of such breezes as blew, and where a liberal supply of water for drinking, bathing, and washing was obtainable. The heat was intense during the later part of June, in July, and at the beginning of August; consequently movements could not be undertaken by either side without grave risk of incurring substantial casualties from heat-stroke and heat exhaustion. The troops enjoyed a well-earned respite during the five months May to September. Sports, which are so essential to the well-being of the soldier, especially when temporarily inactive in a military sense, were freely indulged in, with beneficial results to the health and future fitness of the army for service in the field. Minor operations were, however, carried out during May, June, and July, and on July 8 Sinn El Zibban, on the Euphrates, was occupied. A further advance was interrupted by a blinding sand storm and a heat wave.

Active operations on the Euphrates were resumed on September 26, and Ramadie was entered on September 29, the Turkish commander and his staff being captured. During these operations the heat by day was considerable, and as they were conducted at some distance from the river they were only rendered possible by the excellence of the arrangements for water supply. The captures included 3454 prisoners, of whom 145 were officers, 13 guns, 12 machine guns, 2 armed launches, 2 barges, and large quantities of arms, ammunition, equipment, and stores. The dispatch contains the following reference to medical arrangements. Unfortunately, before it could be received Sir Stanley Maude had himself succumbed to cholera.

'The health of the troops during the summer months has been uniformly satisfactory, and many of the diseases from which we suffered in previous years—such as cholera, enteric fever, and scurvy—were either non-existent or negligible in their extent. This successful result was partly attributable to the untiring work of the officers employed in the bacteriological laboratories, without whose valuable assistance the difficulty of dealing with the epidemic diseases would have been considerably increased. But, although better conditions as regards accommodation and increased facilities for combating the heat resulted generally in a far lower sick-rate, an abnormal heat wave which swept over the area in July was responsible for a heavy casualty list. During this time the personnel of the medical services were severely taxed, but they resolutely and successfully responded to the calls made upon them. All ranks redoubled their exertions as the situation became more difficult, and the unremitting labours of the nursing sisters, many of whom suffered in health themselves, were worthy of the high record for devotion to duty which the nursing service has always maintained. The very practical assistance rendered by the British Red Cross Society and Order of St. John during this trying period was typical of the valuable services so consistently rendered by that organization.' "

A MEDICAL DRAMATIST.

A CORRESPONDENT of the *Lancet* has recently contributed to that publication the following communication relative to Dr. Michael Clancy, a little-known medical dramatist of the eighteenth century:

"In the scanty list of dramatists of the medical profession one seldom sees mention of Dr. Michael Clancy, who was born at Clare about 1700 and educated at Trinity College, Dublin, and who afterwards became a medical student at Bordeaux and graduated Doctor of Medicine at Rheims. He lived many years in Dublin, had a respectable practice and a good reputation, but lost his sight in 1737.

Being incapable of following his profession, he commenced to write for the stage, and in 1739 produced at the Smock Abbey Theatre in Dublin a tragedy entitled *Tamer, Prince of Nubia.* His next attempt was a comedy, called the *Sharpers,* which was praised by Dean Swift. Another tragedy, called the *Extravagant Zealot,* was produced in 1746, and, according to the London *Advertiser,* was greatly applauded. This same year he staged *Tiresias,* the Blind Prophet in Dryden, and Lee's tragedy of *Œdipus,* and King George II granted him a premium of £40.

At the same time another medical dramatist, also an Irishman, had some vogue. Paul Heffernan was born in Dublin in 1719 and studied medicine in France, where he took the degree of Bachelor of Medicine, probably at Bordeaux. He was no brilliant success in the practice of medicine, but was concerned in a political paper called *The Tinkler,* written in opposition to the famous patriot, Dr. Charles Lucas. Garrick produced a farce of his called *The New Hippocrates* at Drury Lane in 1761, and a little piece called *The Lady's Choice* was brought out at Covent Garden in 1759. The celebrated Mrs. Abingdon produced his comedy of *National Prejudice* for her benefit in 1768. Garrick stood in some awe of him, but Croker says he had only very moderate ability, and a ready vein of scurrilous vulgarity. Some amusing and extraordinary anecdotes are related of him in the twenty-fifth volume of the *European Magazine.*"

Correspondence.

VACCINATION CERTIFICATES.

The Massachusetts Medical Society,
Office of the President,
58 Pearl St., Worcester, Mass.,
February 22, 1918.

Mr. Editor:—

The Committee on State and National Legislation approves of and has worked for House Bill No. 752 now before the Legislature, which will require a vaccination certificate from children attending private as well as public schools in the state, and which also provides that physicians who give certificates which state that a child ought not to be vaccinated on account of danger to its health must at least *see* the child so exempted from the law before signing such certificate.

The principle involved has received the endorsement in writing of the presidents of practically every college and university in the state, of the principals of the leading academies, of the Roman Catholic bishops of Springfield and Fall River, of His Eminence Cardinal O'Connell and of the State Board of Health. I ask that each member of the Massachusetts Medical Society constitute himself a committee of one to impress upon his senator and representative the importance of supporting this measure in the interest of the public health.

SAMUEL B. WOODWARD,
President, Massachusetts Medical Society.

SOCIETY NOTICE.

NEW ENGLAND PEDIATRIC SOCIETY.—The fifty-second meeting of the New England Pediatric Society will be held at the Boston Medical Library, on Friday, March 8, 1918, at 8.15 P.M.

The following papers will be read:

1. Pyloric Stenosis.
   William E. Ladd, M.D., Boston.
2. Studies of Infant Feeding. X.
   The Digestion and Absorption of Fats.
   A. W. Bosworth, Boston.
   H. I. Bowditch, M.D., Boston,
   Louise A. Giblin.
   From the Boston Floating Hospital Laboratories.
3. Extremes in Infant Feeding, The Present Tendencies. Fritz B. Talbot, M.D., Boston.
4. An Original Scheme for Demonstrating Infant Stools. J. I. Grover, M.D., Boston.

Light refreshments will be served after the meeting.

CHARLES HUNTER DUNN, M.D., *President,*
RICHARD M. SMITH, M.D., *Secretary.*

The Boston Medical and Surgical Journal

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Addresses.

SOME ASPECTS OF FORENSIC PSYCHIATRY.*

BY J. W. COURTNEY, M.D., BOSTON.

THE accumulated literature of psychiatric medicine has, in our day, reached such enormous proportions that with it one might easily wall about a fair-sized city. In text-book, monograph and periodical, the every word and deed of individuals whose speech and conduct betray the insane character of their mental operations, has been studied from every conceivable viewpoint with such meticulous profundity that the medical man of merely average powers of application is overawed by the evidence of the almost superhuman industry and apparently boundless leisure which have made such studies possible.

It is no part of the purpose of this paper to attempt to estimate to what extent much of this deep research makes possible the fundamental aim of every true physician—the restoration of his mentally sick patients—or to enter upon a discussion of the proper designation for such groups of insane phenomena as tend, with signal frequency, to coalesce clinically. Each of you has, I am sure, his own well-formed opinion on the first point. The second is of no interest whatsoever outside the purely academic.

Some of us, to be sure, are inclined to view with regret a growing mania on the part of certain present-day psychiatrists to obscure rather than clarify our conception of mental disorder by the attempted establishment of unnecessarily fine clinical distinctions, and by the bestowal upon these distinctions of bastard terms of Anglo-Germanic and Greco-Latin parentage. In spite of this misdirected enterprise, however, the fundamental facts concerning insanity are the same today as they were at the inception of mental medicine, and the lunatic of our own times reacts to his disease in a manner identical with that of the lunatic of centuries ago. Hence, it follows that, for those of us who possess the proper equipment of historical knowledge and sound clinical experience, and who put to the best and fullest use our faculties of observation and logical induction and deduction, there should be but little difficulty in determining, to the satisfaction of the community at large, whether a given act which has brought an individual into conflict with the law, is the act of a sane and responsible person or of one who, according to the standards of sound science and common sense, may properly be adjudged insane and irresponsible. This is particularly true with regard to those individuals who are guilty of acts of violence or of actual homicide—at least this is the thesis I shall endeavor to uphold.

Even the mere tyro in psychiatry knows that in certain types of mental disorder the patient is strongly impelled by his delusions and hallucinations to harm those who are unfortunate enough to excite his insane displeasure. On the other hand, singularly few physicians appear to realize that in the great sum-total of insane throughout this country the percentage of violent or homicidal patients is not merely relatively but absolutely small. It is, nevertheless, the fact, and one whose significance should never be ignored in arriving at our opinion with regard to the mental status and responsibility of a given homicide.

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* Paper read by invitation before the Rhode Island Medico-Legal Society, at its Quarterly Meeting held at the Rhode Island Medical Library, January 31, 1918.

It may, I believe, be safely stated that all the homicidal insane belong in some one of the following clinical groups—1° acute mania; 2° the maniacal phase of maniaco-depressive insanity and of the psychoses which bear the questionable label—"involutional"; 3° paranoia, and the paranoid form of dementia precox; 4° feeblemindedness; 5° the epileptic psychoses; 6° dementia paralytica.

Concerning all these forms of insanity the available clinical data are, through the efforts of certain broadly-experienced and well-balanced men among successive generations of alienists, the best-established and most dependable in psychiatry. From such data we obtain pictures of the various types of homicidal lunatics, which are vivid and comprehensive; and the more closely we are guided by them in judging of the mentality and responsibility of an alleged insane murderer, the more thoroughly we will satisfy the combined demands of justice and science.

To reproduce these clinical pictures does not fall within the scope of this paper, but from them the following paramount conclusions may be drawn—1° that in a given case, murder is never either the first or the only evidence of insanity; 2° that the genuinely insane homicide's act is always either entirely motiveless or is executed for motives which clearly attest, to the satisfaction of even a layman, the unbalanced character of the murderer; 3° that in the maniacal frenzies—and these furnish by far the largest quota of homicides—there is never any deliberate selection of the victim or victims: 4° that the next largest quota of insane homicides is found among the paranoiacs and the paranoid precocious dements, and that their victims are practically always deliberately chosen from the ranks of those who are prominent or quasi-prominent in public life, the choice being made on the ground that such people are the principals in a relentless system of persecution; 5° that the murderous instincts of the feebleminded most commonly lead to infanticide, and that their motives are either indeterminable or have for background some sexual perversion; 6° that the epileptic murderer invariably springs from the habitual criminal class; 7° and lastly, that the paralytic dement is the rarest among insane homicides and exhibits homicidal tendencies only when, actively possessed by the delusion that his physical strength is colossal, he desires to give noisy and destructive demonstration of it, and is prevented from so doing by his attendants.

In view of what precedes, I will at this point venture the statement that here in America but few homicidal lunatics, not excepting even the astute and wily paranoiac and paranoid types, are allowed to enjoy for long a personal liberty which enables them to carry out their murderous designs upon society. And with equal positiveness, I will add, that in no case in which murder is the act of a genuinely insane person, is the perpetrator of the crime compelled to stand trial for his or her life before the bar of justice.

How comes it, then, if what has just been said is true, that at disturbingly frequent intervals the columns of our press are filled with reports of the testimony of learned alienists in murder trials? This is a question whose answer involves matters almost as broad in their scope as those which lead to the overthrow of a monarchical form of government. Nevertheless, I shall endeavor to answer it, and I trust that you will bear with me if, in this attempt, I appear to be guilty of the unpardonable crime of discursiveness.

In the main the answer concerns the psychology of certain types of alienists—a matter of far greater interest and concern to the profession and public than the psychology of a given alleged insane homicide. From personal observation and from a close study of the transcript of the medical testimony in a number of murder trials in which the defense has been insanity, I have been able to identify and group the following distinctive types among psychiatric witnesses—1° the naïf; 2° the propagandist of the ultra-scientific and 3° the echolalic.

Not the least noteworthy fact about these three types is that they are invariably found on the side of the defense in a given murder trial. No less noteworthy, furthermore, is the additional fact that such a trial is invariably sensational—it is perfectly logical that it should be. Public excitement is naturally aroused when, by their utter failure to agree, men supposedly honest and supposedly equally well versed in mental science make it possible for twelve laymen to become the arbiters of the sanity and responsibility of an individual who has taken another's life.

In this connection, permit me to call your attention to the signal infrequency with which this curious duty devolves upon jurors when proletariat murders proletariat. This, as you perfectly well know, is not because the problem of sanity and responsibility does not arise in such cases, but for the simple reason that the task of its solution devolves, as it should, upon medical men of conscience, sound judgment and ripe experience, unhampered in the performance of this solemn duty by the distracting interventions of legal counsel and the co-deliberation of sophomoric and unwelcome confrères. And be it here said in tribute to the honor and sagacity of those physicians who undertake this most responsible of civic duties, that it is negligibly seldom that their final judgment in a given case fails to lead to the most edifying administration of justice.

To return to the cases which afford the psychiatric expert an opportunity to air his views in court, we invariably find that the principals in the tragedy are socially prominent—whatever that may mean. The one certain thing it does mean, is that there is never a dearth of available funds with which to procure a galaxy of counsel—medical as well as legal—whose sole obvious purpose is to free a murderer from the heavy hand of the law.

When we examine critically the life histories of socially prominent homicides of either sex, we find that they are all cast in pretty much the same mould. The majority of both sexes first see the light of day in surroundings which denote an affluence unknown even to their most recent forbears—surroundings, furthermore, in which genuine cultivation and spirituality are conspicuous by their complete absence. In but few cases is there evidence of ancestral mental obliquity, either immediate or remote, that is worthy of a moment's consideration in its bearing on the sanity of the future homicide. More often than not the paternal parent is a shrewd, hard-headed man of affairs, whose sole preoccupation is to keep at least to the letter of the law in the prosecution of enterprises which tend daily to swell still further an already swollen fortune. In such a case the care of children is left entirely to the mother who, in turn, delegates this task, which would seriously hamper her social activities, to nurses and governesses.

Where family wealth is very recent and the product of paternal native shrewdness, tireless energy and self-denial, it is common for the author of this wealth to determine to give his sons and daughters the "advantages," as the expression goes, of which his life has been barren. Unfortunately, this determination is very apt to breed in the recipients of parental bounty not the traits of character that are an ornament to any period of life, but swinish self-indulgence, spineless dependence upon luxury of every sort, insufferable snobbishness, fondness for vulgar ostentation, aspiration to the meretricious glory of so-called social supremacy—in a word, everything which tends to catapult the devotee of the flesh-pots along the parabolic route which leads from shirt-sleeves to shirt-sleeves.

In certain cases the homicide to be is the only surviving child of a widow of abundant means. For the boy this too often means long years of close attachment to maternal apron-strings, of mollycoddling and character stunting. For the girl it means, with equal frequency, the same careful shielding from contact with the great horde of vulgarians who stand without her own particular social pale, and the exposure, through maternal complacency, to influences within, which are, potentially at least, of far graver menace. The matter of health aside, the mother's concern centers chiefly upon the daughter's social success, the crowning point of which is a marriage which will, in every way, satisfy the social standards of her little world. To this end the purse-strings are generously loosened and daughter is afforded a sort of continuous private view of life in which the pictures are largely rose-colored,—the frames of gold.

In America the finished product of this system of upbringing is, with notable exceptions, a young woman whose knowledge of the English language is, in most respects, inferior to that of the average Continental of her own sex and social position; whose practical acquaintance with foreign tongues would not avert for her starvation, if getting something to eat depended solely on her ability to converse in them; whose familiarity with old-world monuments is mainly acquired through the latter's proximity to the shops of well-known purveyors of feminine adornment; and whose lack of taste and discrimination in art, music and literature helps to foster the inane productions of knavish artists, of composers of modern musical jingles, and of a school of literature subversive of public and private morals.

A list of this same young woman's positive achievements is equally edifying. The art of self-adornment holds no secrets for her. She is rarely overdressed—quite the contrary. Indeed, on notable social occasions, what with the daring décolletage and the brevity and diaphany of her gown, there is little of her physical charm that is concealed from the eye of even the casual observer. Usually she is versed in all the amazing intricacies of the modern dance, in which she is ready to indulge on every possible occasion. Her genius for absorbing and retaining scandalous gossip would, in the old days, have landed her in the pillory. And her stock of conversational small-change is as unlimited as her feeling of boredom when any topic is introduced that smacks of the intellectual or "high-brow," as she is pleased to term it.

We do not need the assistance of a psychologic pundit to enable us to discern in the product of these systems of upbringing the germ of tragedy, whose full fruition is, with too startling frequency, heralded in the public prints under the glaring headline "Society Woman Shoots and Kills Husband," or "Society Man Murders Wife." No more do we depend upon psychology or any other science to make clear to us how fate prepares the soil for this ghastly fruition. Her methods are both stereotyped and obvious.

I shall not attempt to set forth all these methods. A study of but two will serve my purpose. Let us begin with the evolution of the homicide who, in childhood, youth and, in certain cases, even in early manhood, has been sedulously isolated from his fellows by the mother solicitude. In such an individual the growth of character is early strangled by the rank weeds of egotism, maternally fostered. The invigorating sap of altruism never permeates it. This egotism early manifests itself in the most sinister manner. Lack of attrition with the outside world, the incessant pampering of the body and the constant proximity of nurses and governesses all make for a precocious awakening of the animal instincts. By the time puberty is established the sexual appetite is already abnormal, and finds satisfaction in masturbation and in pervert acts or actual sexual intercourse with housemaids. Not so many years later there begins a surreptitious and tentative tippling. At first the family sideboard provides the means for this dangerous experiment which, toward the end of the individual's teens, is amplified at the bars of hotels where his summers are spent.

Of his intellectual activities but scant mention need be made. He must not be exposed to the health-menacing atmosphere of schools; hence, is tutored at home. He is not dull. He knows to a nicety the amount of his expected inheritance, the character of the maternal holdings and the extent of the annual revenue therefrom. Of banking and single-entry he is conversant with the rudiments. Satisfied with the possession of this knowledge, he concerns himself but desultorily with the more humanizing forms. Standard literature holds only the feeblest interest for him. Occasionally he beguiles the tedium of a railway journey or a stormy afternoon with the novel of the hour.

Small wonder, then, when death casts off forever the maternal apron-strings and the individual in question, now past his majority, is launched upon the world with an ample bank-account, that his sole aim in life should be the satisfaction of his organic longings. We will omit the unedifying details of his sordid and perverse course along the primrose path, up to the time of his marriage. Why he should legitimatize his sexual relations with any female is not altogether intelligible. The most reasonable conjecture is that it is a matter of barter, that in the sexual repertory of the chosen woman there are refinements of erotic excitation and satisfaction beyond the compass of all others, and that these are procurable only by grant of legal access to the rake's pocket-book. Be this as it may, the marriage is consummated. Numerous pregnancies occur and are brought to abrupt termination through the illegal offices of venal practitioners. After a time the keen edge of the husband's sexual appetite grows dull, while his craving for alcohol waxes. During the years of his infatuation he has, parcel by parcel, ceded to his wife a goodly portion of his property. He openly curses himself for this folly, as he now terms it, and swears that he is at the end of it. At this change in his attitude the wife's true nature comes to the surface. She becomes the perfect shrew, jealous beyond expression and vituperative as a fish-wife. Quarrels and threats of violence come to be of daily occurrence. The household servants are thoroughly cognizant of all this, but their silence is assured through various channels. Relatives and friends know nothing of the real situation, and public scandal is successfully averted until the inevitable happens and the bulletin boards and newspaper headlines flare forth the stereotyped "Society Man Murders Wife."

Directly the murder is committed, the husband summons the servants and tells them what he has done. Later he telephones a physician. This done, he sits about, head in hands, moaning and asking himself aloud why he did the deed. This indicates profound unconsciousness of his act. His memory defect is equally profound. He recalls nothing of the circumstances of the crime beyond the fact that there was a violent quarrel similar in all respects to scores of its predecessors, that oaths, villifying names and threats were exchanged, that his she-devil of a wife jumped and secured a revolver, that he snatched it, turned it quickly upon her and rapidly emptied the contents of four or five of its chambers, with the utmost accuracy of which he was capable, into her left chest, and, finally, that she crumpled and dropped in her tracks like a towel from a rack. This memory is, however, of only brief duration and is succeeded by a permanent *amnesia* that embraces every incriminating circumstance.

To the medical man without psychiatric experience there is absolutely nothing in the history of this case that even remotely suggests insanity and irresponsibility on the part of the murderer. From every point of view it seems to him as sordid and commonplace as any in the annals of crime. To the naïf type of alienist, however, it is quite capable of an entirely different interpretation. He cannot overlook the murderer's state of unconsciousness during which he informed the servants of what he had done, and summoned the doctor by telephone. Then, there is the profound amnesia by which the crime and the circumstances leading to it are completely obliterated from the slate of memory. These two important psychic phenomena weigh heavily in the diagnostic scale toward the side of epilepsy. The alienist institutes a patient search for other and equally weighty evidence and is finally rewarded. The daughter of the murderer's old nurse remembers distinctly of her mother's telling her that the boy was frequently carried from the yard into the house, feeling faint and complaining feebly but bitterly of pain in his stomach. His barber recalls that on several occasions when he went to the house to cut his hair, the boy appeared at times to pay no attention to what he, the barber, was saying.

Clearly the case is one of psychic epilepsy. Several of the naïf alienist's colleagues confirm the diagnosis and make the further discovery that the murderer is osteologically younger than his years, has asymmetry of the face, and a hypertrophied Darwinian tubercle of the left ear—

hence, is feebleminded as well as epileptic. Surely, no person thus afflicted could possibly be responsible for murdering his wife. It would be at the same time a scientific error and a serious hardship for the homicide to be compelled to stand trial for his crime. Even the government's experts come finally to see the matter in this light. End result—the poor feebleminded epileptic is in due course removed from the chilling shadow of the gallows to the solarium of a comfortable hospital for the insane.

Without present comment on what just precedes, let us see how fate fosters fruition of the germ of tragedy in the feminine product of the type of upbringing which I have been at length to describe. Here the picture is not so consistently drab. There is the usual brilliant débût into society. The débûtante is fêted, admired, flattered and courted. From this point on, marriage is her constant and absorbing preoccupation. Of the true meaning of this sacrament she is as guiltless as an unborn babe. Marriage to her merely connotes an establishment, a place in which to entertain in the lavish manner to which she is accustomed. Of suitors she has an embarrassment of choice. Heaven only knows what guides her selection, unless it be a feline sense of satisfaction at diverting the so-called heart interests of a certain man from some other woman—generally one of her dearest friends. Her marriage is as socially brilliant as her débût. The groom is youthful as to years, but old in experience of the world, particularly of the feminine portion of it. He has taken his pleasures where he found them, and marriage promises to put only a temporary curb upon the firmly established habits of bachelorhood. Of the true inwardness of his nature she knows as little as he does of hers—and that is a negligible quantity

Two or three gay years speed by. Then pregnancy occurs. The prospective mother loathes the physical discomfort of it all and chafes under the enforced interruption of her social activities. Also she takes irritated note of the fact that her plight, instead of increasing, diminishes her husband's devotion to her. On the other hand, towards the end of her pregnancy, his devotion to his clubs is conspicuous and adds tremendously to her irritation. The advent of the unwelcome baby in no way relieves the situation. In the next few years the husband's indifference grows to a marked extent, and he takes little pains to conceal it. He is back again under the thrall of his old and deeply-rooted bachelor habits.

It is needless to pass in detail over the stereotyped emotional phases which mark the reaction of the wife to the husband's treatment. As we all know, they are cumulative and, for him, sinister. For cogent reasons best known to herself, she refrains from seeking relief in the courts. Indeed, the removal of his presence through legal channels would not assuage the deadly hatred of him that she now nourishes. Night and day she broods over the wrong he has done her. The one thing above all that goads her to desperation is the thought that she has been cast aside for another woman. And then one fine day, after months of incessant brooding, she lashes herself into the more than hellish fury of the woman scorned and with the fixed idea that, if she cannot have this man who is her legal husband, no other woman will, she shoots to kill.

Once the killing is an established fact, the woman that is in her again assumes the ascendancy. She experiences a revulsion of feeling which betrays itself in an hysterical crisis of utmost intensity. In this hour of torment freakish Nature denies her the safety-valve of tears, hence the bodily ravages occasioned by the tumultuousness of her pent-up emotions are widespread and terrible. Quickly she becomes hollow-eyed and pallid. Her flesh drops from her like a mantle. Appetite dwindles to the vanishing point; digestion is at a standstill. The acute hypotonicity of her vascular system betrays itself in palpitating heart and cold, clammy and mottled extremities. Not many days elapse before her trembling limbs refuse longer to bear her and she is forced to keep her bed, where she lies, a huddling, haunted figure—the perfect embodiment of the most abject misery.

Personally, I can discern nowhere in the operation of this woman's mind any faintest evidence that would lead me even to suspect that insanity and irresponsibility were the agents that prompted her to do murder. And yet, through the sworn testimony of alienistic propagandists of the ultra-scientific—or at least ostensibly through their testimony—she is acquitted on the ground that she was entirely irresponsible at the time of the homicide.

Probably you are quite as unable as I to discover upon what basis a diagnosis of irresponsibility is possible in this case. The secret of our inability lies in our ignorance of the ductless glands and their peculiar and subtle influence on the operations of the mind. To the ultra-scientific alienist the situation is as clear as crystal. He knows, from the clinical phenomena presented by the murderess *after* the crime, that she was, at the time of the murder, unquestionably the victim of hypothyroidism. He knows, furthermore, that this pathologic condition exerts a profound toxic influence upon the *unconscious* mind which, according to the authoritative word of the most eminent of present-day psychologists, is the directing center of all human action. Obviously, then, if the directing center of an individual's actions is profoundly poisoned by his glandular secretions, he cannot be held responsible in the eyes of the law for *anything* he may do. The logic of it all is irresistible.

Now comes the turn of the echolalic type of alienist. Consideration of him will be deservedly brief. He always figures with the other two types, but is never a protagonist in the legal tragedy in which justice is immolated on the altar of pedantry. He is in the cast solely because, as astute counsel knows, juries count noses. His rôle is indicated by my designation of him. Having no independent opinion, he is the faithful echo of the opinions of his associates.

Those of you who have had the patience to follow my discourse with attention must have noticed that, here and there, it has betrayed faint outcroppings of sarcasm. Let me caution you that these were the result of temperamental peculiarities and were not primarily designed to excite mirth—far from it. The whole sorry business of psychiatric testimony in sensational murder trials is a subject for our most serious and thoughtful consideration. Curiously enough, there is an extraordinary parallelism between it and another form of testimony which has recently excited the just indignation of all true Americans. I refer to that of men high up in military circles in the trials of certain German spies. And with the belief that this parallelism will interest you, I venture to digress somewhat and quote the following paragraph from page 183 of the February number of the *North American Review*—"A *naturalized* German has been arrested for wilfully tampering with the machinery of torpedoes. He is charged with treason, the penalty for which, in time of war, is death. This man will be tried before a civil court, his ingenious lawyers will befog the minds of not over-intelligent jurors, the trial will be the same solemn farce that has made law a disgrace in this country, and the man who has forsworn his allegiance and betrayed his country to the enemy will, in all probability, escape by the payment of a fine, paid by the German Government, or a short term of imprisonment; if he has the luck of Captain Hans Tauscher, who offered to plead guilty to the charge of directing a conspiracy to blow up the Welland Canal, but was declared innocent because prominent army officers testified to his high character and social graces, a sentimental or corrupt jury will acquit him and he will go scot-free, with full liberty to be the means of sending American soldiers to their death."

Let us return, now, to our own affair and see what we can do to remove the stigma which at present very justly attaches to forensic psychiatry—a stigma with which, in reality, we are self-branded through the part we have so often played in aiding "sentimental or corrupt" juries to perpetrate a travesty on justice in the trial of capital crimes.

Enforced reforms through legislative intervention have, from time to time, been suggested by individuals or groups of individuals within our ranks, but, up to the present at least, their suggestions have evolved nothing practical. My own feeling in the matter is that legislative interference is quite unnecessary. The means for wiping out the existing stigma and for self-rehabilitation are, and long have been, entirely within our grasp. As I have already maintained, the clinical data concerning the homicidally insane are among the best established and dependable of mental science, and constitute an acid test which should be applied without modification to every alleged insane murderer, whether he be proletariat or patrician. In this test such elements as sophistry and casuistry are conspicuous by their absence, and if its application were to become universal, we would cease to hear alienists, under oath, emit in court theories concerning mental disease, which are accepted as trustworthy scientific facts by jurors, but which would meet with nothing but contempt even in the humblest gathering of medical men.

THE TREATMENT OF ANTHRAX WITH NORMAL (BEEF) SERUM. REVIEW OF THE LITERATURE WITH REPORT OF A CASE.*

STUDIES IN SERUM THERAPY. VII.

By Clarence H. Hyman, M.D., Boston,
and
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Sclavo's[1] statistics show that in Italy, where anthrax is a notifiable disease, there were recorded in the eleven years, 1880 to 1890, 34,052 cases, with 5812, or 24.1%, deaths.

Legge,[2] in a tabulation of 248 English cases, shows the following mortality:

Upper lid, 46%;
Head and face, 43.5%;
Neck, 41.5%;
Upper extremity, 12.5%;
Lower extremity, 1.2%;
Trunk, 1.2%.

Page[3] records statistics of 508 English cases with 139 deaths—a mortality of 27.3%.

That the mortality may vary in epidemics is indicated by a report in the Vienna correspondence of the *British Medical Journal*[4] of 13 persons infected by Russian hair, with 10 deaths, or 77%.

THE TREATMENT OF EXTERNAL ANTHRAX.

Various methods have been used in the treatment of external anthrax. In large part, the practice of excision of the pustule, followed by the application of antiseptic agents, such as 5% carbolic acid, about the site of the lesion, has been carried out. Cauterization has been practised alone, using carbolic injections, caustic potash, or other agents, to provoke widespread destruction of tissue and bacteria about the local lesion. The powdering of ipecac into the wound, following excision, together with its internal administration, has been the standard method at Guy's Hospital,[5, 6] the mortality following this procedure being very low. Müller[7] and Ramstedt[8] have successfully treated a series of cases by rest, fixation, elevation of the part and the local application of gray ointment. Becker[9] reports a limited use of salvarsan intravenously in the treatment of anthrax, with one death out of three cases treated.

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* Read before the Boston Bacteriological Club, Feb. 9, 1918.

Boston City Hospital Records for the 11 years, January 1, 1907, to January 1, 1918, show 26 cases of external anthrax treated by excision or expectantly (hot compresses), with a mortality of 8, or 31%. None of these cases furnished a positive blood culture. One case, which terminated fatally, received intramuscular injections of 95 cc. (divided doses) of anti-anthrax serum, beginning 48 hours before death. The cases treated expectantly, seven in number, all recovered. A similar result with expectant treatment has been observed at the Massachusetts General Hospital. The cases which developed a septicemia died. Those which did not develop a blood invasion recovered.

The modern conception of external anthrax is of a low-grade infection, which usually remains localized for long periods, and tends to get well under expectant treatment, except in certain situations, such as the eyelid. If invasion of the blood stream occurs, the mortality is 100%, under any other treatment than that by serum.

SERUM TREATMENT OF ANTHRAX.

The pioneer work in the prophylaxis of anthrax was carried out by Toussaint,[10] who heated the blood of animals dead of anthrax to 55° C. for 10 minutes, and then injected it into the animals he wished to protect. Although the blood was often crowded with bacteria, no harmful results followed, and the inoculated animals were later refractory to infection by virulent anthrax bacilli.

Pasteur, Chamberland and Roux[11] first practised the use of attenuated cultures of the anthrax bacillus as a prophylactic against naturally acquired anthrax. This represents the first use of a bacterial vaccine in medical history, and the first attempt to produce immunity by the use of an agent of known character.

The discovery by Richet and Hericourt[12] of the preventive properties of the serum of immunized animals, followed by the work of Behring on diphtheria antitoxin, and of Kitasato on tetanus antitoxin, led to investigation by many workers of the possibility of producing a similar anti-serum for the treatment of anthrax.

Efforts to obtain a soluble toxin from cultures of the anthrax bacillus were without avail, however, if we except the so-called toxin obtained by Marmier,[13] by growing the bacillus in glycerinized peptone solution. This product, it is now agreed, is an endotoxin arising from autolysis of the organisms.

Marchoux[14] first produced experimentally an anti-anthrax serum, which was used effectively in curing animals experimentally inoculated. Sclavo, working first with rams,[15] and later with the ass,[16] obtained the anti-anthrax serum, which has had the widest use in the treatment of human anthrax in Italy and England. Animals are immunized by the injection of attenuated cultures of the anthrax bacillus, followed by virulent cultures. In the treatment of infection, immune serum is introduced by intravenous or intramuscular injection, in doses of 10 to 50 cc. More recently, Sclavo affirms that smaller doses than 60-80 cc. are useless (cited by Anthrax Investigation Board[17]).

Sclavo[16] reviews the cases treated in Italy with his serum, and reports a mortality of 6.09% in 164 cases, as compared with a mortality of 24.1% in Italy under other methods of treatment.

Legge[2] reports 12 English cases treated by Sclavo serum, with two deaths, one in a case comatose at the time of beginning treatment. He summarizes Sclavo's claims for the treatment under these heads:

1. In very large doses it is innocuous.
2. It can be well borne, even when introduced into the veins.
3. No case taken in an early stage, or of moderate severity, is fatal if treated with serum.
4. With the serum, some cases are saved when the condition is most critical and prognosis almost hopeless.
5. When injected into the veins, the serum quickly arrests the extension of the edematous process, so as to reduce notably the danger from suffocation, which exists in many cases where the pustule is situated on the face or neck.
6. The serum, if used early enough, reduces to a minimum the destruction of tissue.
7. In some situations of the pustule, as the eyelid, serum must be used in preference to any other treatment.
8. Persons attacked, when treated with the serum, appear to become convalescent in the course of a few hours.
9. In internal anthrax, it is the only treatment which can hold out any hope.

Page's statistics[3] from English cases of anthrax treated with serum, show an apparent higher mortality than in untreated cases. In the earlier group these results were undoubtedly due to the use of too small doses (10, 20, and 30 cc.). The later results correspond more closely to those of Sclavo, if we exclude cases in which serum was used *in extremis* and where death occurred within 24 hours after the exhibition of the serum. The early history of diphtheria antitoxin shows a similar apparent high mortality, due to the introduction of serum only as a last resort. Familiarity with the value of the serum led to its earlier use and a change in the picture in recent years.

Mendez,[18] from the Institute of Experimental Hygiene in Buenos Aires, claims priority in the manufacture of an antitoxic serum against anthrax, and further claims that 3 cc. of the serum which he prepares will cure cases of external anthrax. Details are not furnished of the method of preparation, but he writes, "Sclavo in Italy has confirmed my findings and found literal proof." The presumption, therefore, is that Mendez' serum is produced by the method described by Sclavo. In 1073 cases treated by his serum the deaths were 44, or 4.19%. In cases which died, the serum was used in moribund individuals, or the death was due to edema of the glottis and the throat, to myocarditis and atheroma, or to alcoholism.

METHOD OF ACTION ON ANTI-ANTHRAX SERUM.[*]

Sclavo, Burow, Jager and Becker have demonstrated that anti-anthrax serum is an efficient means of cure of even anthrax septicemia, in which the outlook by any other method of treatment is hopeless. All agree that, in this condition, the bacteria vanish rapidly from the blood stream under intravenous serum injections.

In spite of these remarkable effects, efforts to account for the action of the serum have led to contradictory and unsatisfactory results.

a. Bactericidal Activity?

Anthrax bacilli can be grown in diluted anti-anthrax serum, just as they can be cultivated in dilute normal serum. There are no differences, in this respect, between immune and normal sera.

Sobernheim and others have shown that various anti-anthrax sera have no more marked bacteriolytic powers than normal sera from the same species (sheep, cattle, horse, sheep and dog).

Anthrax bacilli exposed for hours in the thermostat and ice-chest to anti-sera, lose none of their virulence, and the serum loses none of its protective powers (Ascoli).

There is no evidence of bacteriolytic activity, even in the body, by Pfeiffer's test. Virulent organisms injected into the peritoneal cavities of immunized guinea pigs exhibit no greater granular change, and undergo no more frequent extracellular solution (lysis), than is shown in control animals which have received injections of normal serum with the bacteria, or, indeed, in controls which have received injections of bacteria alone.

Sobernheim tested many anti-anthrax sera from cattle, sheep and horses for complement-fixing activities, and obtained constantly negative results when germ-free extracts of the anthrax bacillus or anthrax edema fluids were used as antigens. Using suspensions of living bacteria, reactions were obtained with both immune and normal sera. While the reactions with immune serum were measurably stronger than those obtained with normal serum, they were inconstant, many of the anti-anthrax sera exhibiting no reaction.

b. Agglutinating Properties?

The anthrax bacillus is non-motile, and has a tendency to group itself in masses. Distinct agglutination, however, may be had in high dilution with some anti-anthrax sera, but is inconstant and not dependable. No parallel can be found between agglutinating power and immunizing strength of sera. The presence or absence of agglutinating properties has no relation to the quality of the serum.

c. Precipitating Agencies?

As is the case with agglutinins, precipitins are found in some sera, but are inconstant and show no agreement with the protective properties of the serum.

d. Bacteriotropic Qualities?

Sobernheim could demonstrate no bacteriotropic properties in immune sera. Sclavo has shown that heating his serum to 55°C. for one hour does not affect in any way its power to confer protection on animals. Sobernheim found that heating to 60° C. did not destroy the protective powers of the serum. These temperatures would destroy opsonins present in the sera.

e. Antiblastic Power?

Under this heading Ascoli refers to the potential power of serum to prevent the normal development of the anthrax bacillus in the body, in particular with reference to the formation of capsules. Many authorities believe that there is a relation between capsule formation in the anthrax bacillus and its virulence. Although capsules do not appear in ordinary culture media, they may be formed in media containing fresh albumens, and are constantly formed on the organisms in the blood and tissues of infected animals.

With Preisz, Ascoli claims that the anthrax bacilli are destroyed so quickly in the immunized animal that the protective capsule of the bacillus cannot be formed. This phenomenon could not be shown in comparative tests of normal and immune serum *in vitro,* but a marked difference was observable in the bodies of normal and immune animals. It was, therefore, argued that, while the immune serum did not in itself possess the substances inhibiting capsule formation, it actuated their production in the body of the immunized animal.

Sobernheim has obtained cultures, virulent for susceptible animals, from the inoculation atrium in highly immunized animals, up to one week after massive injections; Metchnikoff up to 14 days, and Marchoux up to 70 days; so that the bacteria are not all killed quickly in immune animals. Moreover, immune animals are protected, even against the injection of capsulated organisms contained in the blood of animals dead of anthrax.

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[*] For references under this head consult Sobernheim, Kolle and Wassermann's Pathogenic Micro-organisms, 1913, iii, 583.

Preisz admits that capsules may be formed on anthrax bacilli (cultures) introduced into passively immune animals, and Sobernheim and Bail have found capsulated organisms in large numbers in highly actively immunized animals for some time after massive injections of anthrax cultures.

f. Stimulation of Phagocytosis?

Marchoux observed that the introduction of immune serum into normal animals was followed by a rise in temperature, which was slight and subsided quickly, and also by a fleeting leucocytosis. He, with others, believes that phagocytic activity is exhibited in greater degree in animals which have received immune serum than in those which have not.

Sobernheim could not confirm these observations with reference to phagocytic activity. He found that an increase of leucocytes follows the injection of blood serum, whether the serum be normal or immune, and could not observe any qualitative differences in this respect in the reaction of experimental animals.

Pettit, in 1901, demonstrated that injections of heated normal horse serum would be followed by a leucocytosis, and more recent work has shown that a rise in temperature, with a fleeting leucocytosis, will follow the introduction into the animal body of any foreign proteid.

We are left, then, with no tangible evidences of the presence of specific immune substances in anti-anthrax serum, although the clinical and experimental evidence of its powers to protect is beyond question. The only objection to its use is that the preparation and marketing of the serum seem to entail a high expense, the cost of the initial dose running as high as thirty dollars or more.[19]

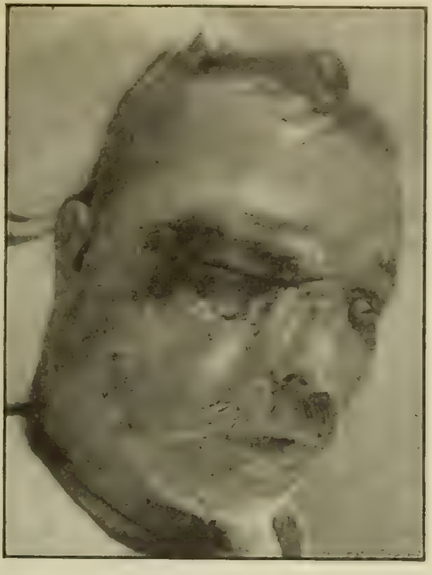
THE USE OF NORMAL SERUM IN ANTHRAX.

The replacement of immune serum by normal serum in the treatment of anthrax is due largely to the activities of R. Kraus, formerly of Vienna, who came to Buenos Aires to accept the headship of the Bacteriological Institute of the National Department of Health of the Argentine Republic. Penna, Cuenca and Kraus[20] report the treatment of 50 cases of anthrax by normal beef serum, with no deaths. The serum was heated twice to 56° C. for one-half hour, in order to eliminate the toxic effect of beef serum. In a later paper[21] they report 90 additional cases, with one death.

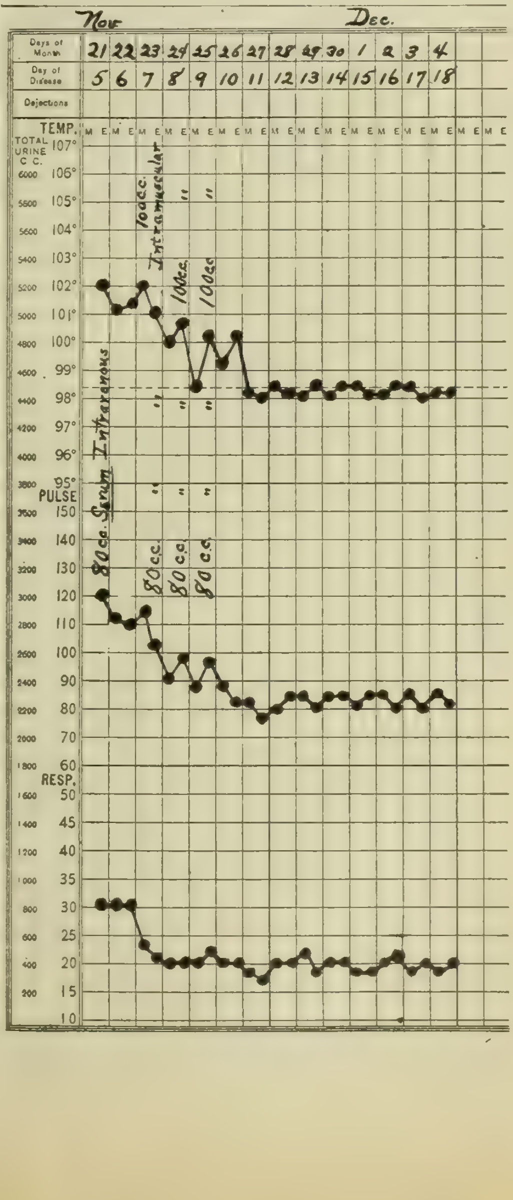
Solari[22] reports 6 cases treated with heated normal beef serum, with no deaths.

The mortality in these 146 cases was 0.68%.

Kraus claims that the new medication produces sensibly the same benefits, utilized intravenously or hypodermically, although obtaining without question a greater intensity of action when the serum is introduced directly into the



Treatment of Anthrax with Normal (Beef) Serum.



vein. . The results "exclude all doubt regarding the real and positive efficacy of this treatment in the cure of malignant pustule, and even of carbuncular septicemia. Hypodermic medication was sufficient in many cases, but in grave cases with intense symptoms, or accompanied by septicemia, the intravenous method is better and more sure, and requires no more care than is necessary in other intravenous medication."

Dosage. "Doses of 10, 20 or 30 cc. constitute the ordinary quantity for each injection, augmented to 40 and 50 cc. or more in more intense cases."

ANAPHYLACTIC RESPONSE.

"It is interesting to note that the therapeutic application of heated normal beef serum has produced no general or local disturbances comparable to those frequently produced by horse serum. This last produces in 10% or more of the cases treated, allergy or serum sickness. Nothing comparable has appeared following the use of normal beef serum. In only two cases have we seen a slight hyperemic zone, with little intensity and fugitive, surrounding the point of injection, and found commonly following the injection of even the most innocent solutions."

METHOD OF ACTION.

"The injections, whatever the via employed, lead to an immediate elevation of temperature with a descent in 24-48° to the normal. At the same time there is produced a favorable local reaction, characterized by diminution of the edema and a bettering of the general condition. In some cases the edema progresses and the fever continues until a new injection is made" (Kraus).

Lignieres,[23] who had supplied the commercial anti-anthrax serum used in the Argentine before the advent of normal serum therapy, entered into a bitter personal controversy with Kraus in the local journals and medical societies. He comments on the greater toxicity of beef serum in comparison with horse serum, even when heated, and denies that it possesses the properties against anthrax such as are manifested by any good specific serum from a horse immunized against anthrax.

In a later paper[24] he reports extensive experimental work, all apparently proving that Kraus has been misled in his statements as to the efficacy of normal serum. He argues that anthrax is prevalent in cattle; if their serum possessed any natural defensive properties, it would seem as if their serum would protect them against the disease.

In spite of Lignieres' strictures, Kraus and his co-workers continue to demonstrate the efficiency of heated normal beef serum in the treatment of anthrax.

PROBABLE METHOD OF ACTION.

The most rational explanation of the activity of normal beef serum in anthrax is that it obtains results by provoking a non-specific proteid reaction. Kraus was one of the pioneers in the study of this phenomenon in Europe in the treatment of typhoid and other diseases. Foreign proteids introduced into the body give rise to a transient increase in temperature, accompanied by a leucocytosis, which is also fleeting This reaction, which is in no way specific, has been shown to be capable of terminating a considerable percentage of cases of typhoid fever by crisis, and is now used widely in the treatment of low-grade infections, such as rheumatoid arthritis.

Foreign serum is, perhaps, the blandest agent which can be introduced into the body for the production of this reaction, and beef serum has the advantage over horse serum that it does not give rise to serum sickness, which did not appear in the series of Kraus, has not been seen by Dr. Edwin Place in a large series of human beings immunized prophylactically against diphtheria by the use of antitoxic beef serum, and has not arisen in the series of wound infections we have treated, although doses totalling 1350 cc. by intramuscular and intravenous injection were given in one case.

CONCLUSION.

In the discussion of the method of action of specific anti-anthrax serum it was made apparent that no satisfactory explanation could be offered of the mechanism which produces the results obtained, other than the excitation of phagocytic activity, and this is not a specific immune response, but will follow the introduction of any foreign proteid into the animal body.

Whatever in the way of immune substances may be present in specific anti-anthrax serum, the amount of these materials must be very small.

It is reasonable to conclude that specific anti-anthrax serum owes its efficacy in small part to specific immune substances, and in large part to a non-specific proteid reaction, obtainable by the use of other proteid substances as well. Of these substances, heated normal beef serum is, perhaps, the blandest and least objectionable.

The history of our case follows:

Nov. 21. The patient, a longshoreman, aged 51, admitted to the hospital. Five days ago there appeared a small sore on the right side of the face, and following this, there has developed very rapidly a marked swelling over the whole right side of the face. There has been severe pain. Patient too sick to give a history.

Examination showed a massive edema and infiltration of the whole right side of the face, extending from the temporal region well down the side of the neck, and posteriorly behind the ear. The right eye is completely closed because of swelling of the lids. The skin over the right side of the face is glistening and dark red in color. The left eye is also practically closed because of swelling of the lids and swelling about the left cheek.

Just lateral to the external canthus of the right eye is a small circular area about the size of a dime, covered with a hard, dry and almost black crust. No vesicles. There is a dark discoloration about the upper and lower lids of the right eye, which cannot be opened because of the dense infiltration of the lids.

Patient is very restless and in a semi-conscious condition. Can be aroused, but takes no interest in what is going on about him. Temperature 102, pulse 120. Smear from lesion showed B. anthracis and a staphylococcus.

Patient seen by Dr. Hubbard, who gives little hope for recovery.

Treatment.—Hot poultices over right side of face. (1) 80 cc. of heated beef serum intravenously.

Nov. 23. There was no reaction following the injection of serum. Condition of patient remained practically the same as at entrance. (2) 80 cc. beef serum intravenously, and 100 cc. injected deep into lumbar muscles.

Nov. 24. No general or local reaction. Blood culture negative. (3) 80 cc. beef serum intravenously and 100 cc. into lumbar muscles.

Nov. 25. No general or local reaction. Patient appears much brighter. The swelling of the face is subsiding. (4) 80 cc. beef serum intravenously, and 100 cc. into lumbar muscles.

Nov. 26. About one hour following the last injection of serum, the patient had a chill, but with no marked rise in temperature. The left arm at the site of intravenous injections, is considerably swollen, reddened and tender. There has been a marked decrease in the swelling of the face and patient feels fairly comfortable. Still unable to open right eye.

Nov. 27. Temperature and pulse normal. Patient comfortable. Swelling and redness about left arm subsiding. Very little swelling about the face. Skin over the upper and lower lids of right eye is becoming gangrenous.

Nov. 29. Temperature and pulse normal. No inflammation about the left arm, and practically no swelling about the face. Upper and lower lids definitely gangrenous.

Dec. 3. Most of gangrenous skin and subcutaneous tissues trimmed away. Considerable amount of thick yellowish pus. Smear showed staphylococcus. Edges of the living skin are raised, reddened and rolled in, and a considerable amount of pus can be expressed from the undermined edges. Small area of apparently normal skin just above the palpebral border of the upper lid.

Treatment.—Irrigations with beef serum and wet beef serum dressings every four hours.

Dec. 7. Redness and fluctuation over zygomatic process. Small incision made over this area to allow better drainage and through-and-through irrigations with beef serum. There is a large amount of thick pus.

Dec. 11. Practically no pus. Base of ulceration is clean and covered with healthy-appearing granulations. There is a beginning contracture of the tissues below the eye.

Dec. 15. Granulations growing very rapidly and bright red in appearance. There is no exudate. Smear shows only an occasional organism.

Dec. 19. Ready for a plastic operation.

Unfortunately, the blood culture was not made until 24 hours after the first injection of serum. The photograph was taken Nov. 27, after the edema had subsided.

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Original Articles.

THE DIAGNOSIS OF THE CONDITIONS CAUSING PAINFUL AND IRRITABLE BACKS.*

By James Warren Sever, M.D., Boston.

This subject has been uppermost in my mind for several years, on account of having had to decide in many separate cases the conditions existing in an individual's back, and to give a definite diagnosis and prognosis, at one examination. This has not been a light responsibility, and I am now in the process of looking up these cases to see how far my opinions were correct. I had hoped to have the data ready for you tonight, but my time has been so short, that it is not ready for presentation.

These cases were seen for the Massachusetts Industrial Accident Board as an impartial examiner, and presented all types of backs in all types of individuals—male and female. There was always the psychological element of litigation, which is supposed to be absent under the law in compensation cases, present in these individuals, which added to the difficulty of the correct diagnosis.

These cases differed, however, from the ordinary routine backaches or strains one usually sees, because of the constant factor of definite trauma as an exciting cause.

Painful and irritable backs are most common in the usual run of medical practice, without a history of accident or trauma, and these are the cases I want especially to call your attention to. In fact there are few diseases in which backache does not occur. The condition is attributed to the kidneys by the kidney pill man, and to the feet by the maker of orthopedic shoes, as well as to other ills which flesh is heir to by the person who may happen to have an infallible remedy for that particular ill. It is a much neglected subject and it is not surprising that many cases drift about to become the prey of the patent medicine man, because of lack of adequate examination and definite checking up of the patient's symptoms, history, and posture. I say this advisedly, because so many cases can be so easily relieved by simple treatment.

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* Read at the Newton Medical Society, January 14, 1918.

Now what is meant by a painful or irritable back? It is this—a person complains of pain in the back generally situated low down, that is, at or below the dorso-lumbar junction, and of constant or intermittent duration. Associated with this pain there may be a dragging feeling in the lower back, which may be worse after walking or standing, but may be present only when sitting, and is relieved by walking about.

There may be tenderness—generally vague—extending from the sacro-iliac joints, which are at times the points of greatest tenderness, to the shoulder blades and the back of the neck. At times this pain extends to the legs, down the back of the thighs, accompanied by a feeling of numbness in the legs, which is best expressed by the patients themselves as a sort of "woodeny feeling." Following trauma the tenderness is generally localized at the site of the injury and may be accompanied by more or less muscle spasm.

CAUSES OF BACKACHE.

There are three large groups of cases which can be readily differentiated at once as having definite conditions which may cause backache. These are as follows:

1. Arthritis of the spine. This condition is often seen and is a painful and persistent condition. It has its periods of remission and exacerbation, until such a time as the vertebrae become fused, when the painful joints in the spine no longer exist and the cause of the pain is removed, namely, motion between irritable joint surfaces. This condition generally exists with other definite signs of arthritis, and may occur spontaneously, or may be present even without symptoms, until some strain or trauma lights the process up, and results in great and persistent disability. Arthritis of the spine occurs most often at or after middle age, and is apt to appear in the laboring man as well as the desk worker. It is not uncommon, on taking an x-ray of a laborer's back, following an injury, to find a considerable degree of hypertrophic arthritis already present, which has been aggravated, at least symptomatically, by the accident, and consequently prolongs his disability and compensation.

Treatment in these arthritis cases generally resolves itself into the application of a plaster jacket, a backbrace, or canvas corset—anyone of which may have to be worn for an indefinite period to insure adequate fixation to the spinal joints. A diagnosis of arthritis of the spine without an x-ray in a given case is not impossible, and at times easy. The back is stiff to bending in any direction, the onset may be sudden or gradual and the disability is great. The cause may be infectious or occupational. The progress towards recovery is slow, even with good treatment.

2. Traumatism, especially frequent in the industrial classes, a very frequent cause of a painful back, is a most common cause of litigation and is a condition about which, an impartial examiner finds it very difficult to arrive at any absolute hard and fast opinion. There is no doubt about the trauma—either direct or indirect—the question is, what damage has that trauma caused? Is there a muscle sprain, a ligamentous tear, a sacro-iliac sprain, a fractured transverse process, or a crushed vertebra? An x-ray may clear up some of the bony injuries, but will not help, except in a negative way, the soft part ones. If the condition is a muscle sprain, the history will be of value. How did the pain start? What was the patient doing when it began? Certain of my cases have had sudden pain in the back when trying to lift a barrel of ashes or when lifting other heavy objects. They felt, as they say, something give way in the back. Generally the pain is in the lumbar region in these cases. There may be localized tenderness over the spinal muscles, and at times the soreness extends around into the flank. I believe the majority of these cases are ones in which a muscle fiber or fibers are torn and, generally, strapping and hot applications, with early use, will effect a cure. Ligamentous tears act in about the same way, are generally of longer duration, and the pain and soreness are deeper seated. Ligamentous tears may be situated in the region of the sacro-iliac joint and so confuse the diagnosis. The ligamentous insertions of the great back muscles in the region of the sacro-iliac joint often lead to doubt and confusion when an injury is localized there. They do not get well as quickly, and heavy work in the future is apt to produce soreness and lameness at the same spot. The treatment in general is the same.

A fractured transverse process is not an uncommon result of having objects fall on the back, or of being thrown against something solid and striking the back. Three recent cases I have seen occurred as follows: One had a pulley-block fall and strike him on the back and break the transverse process of the second lumbar vertebra. Another was a car conductor who was thrown against a car door when the car started suddenly. The third, whose x-ray I will show you, was run over by a team and had all the transverse processes on one side of his lumbar spine broken. Direct and not indirect violence is usually the determining cause. The pain at first is considerable—marked localized tenderness is present, motion is considerably restricted, and as a rule strapping and later baking and massage effect a cure, so that work is resumed in three to four weeks. Complete relief from pain and soreness may not be obtained;

however, for months. There are several other bony conditions which may cause low back pain of which I wish to speak. They are usually associated with trauma and present only, clinically, painful and irritable backs, associated with disability.

The first type is seen usually following falls of some violence, as falls down elevator wells, being thrown out of a carriage or hammock, etc. Clinically there is generally an increase in the normal lumbar lordosis or hollow back, pain and numbness may exist in the legs and the individual is considerably incapacitated, with a very rigid spine. Examination shows a prominent sacrum, and in palpation of it the fingers slip on to a sort of shelf at the junction of the sacrum and the fifth lumbar vertebra. X-rays show that in these cases there has been a definite slipping forward of the fifth lumbar vertebra on its articulation with the sacrum, resulting in some cases in definite cord pressure symptoms. A lateral x-ray will show this defect very well. Treatment should be directed to support of the spine, by braces or jackets. Some cases have been relieved by a bone graft operation to fix the slipping fifth lumbar vertebra to the vertebra above and the sacrum below, and so give relief. The condition is known as traumatic spondylolisthesis. The second so-called bony cause of back pain is one which, to my mind, is yet not proven, according to the English jury verdict. Certain observers have stated that a long transverse process of the 5th lumbar vertebra causes pain in the back by impinging on the crest of the ilium and have shown x-rays apparently showing this condition. Certain cases have been operated on with relief by removing the offending process. It is not yet clear to my mind whether rest in bed for several weeks or removal of the process caused the cure. The operation is difficult and dangerous. If you recall the anatomy of the region you will remember that the transverse process of the 5th lumbar vertebra is situated well in front of the plane of the crest of the ilium, and as increased lordosis, which is said to cause the impingement, increases also the distance between these two bones, I fail to see just how anything but inaccurate observation, or an enthusiastic operator, could attribute pain and disability to such a cause in the absence of anything but definite congenital malformation.

3. The third class of cases, generally recognized as such, but often associated with definite orthopedic defects, is that where displacement of the pelvic organs in women is at fault.

Hutchins[1] believes that an anteposition of the uterus, associated with a descent of the cervix, and so resulting in an engorgement of the ovaries and their veins, is a frequent cause of backache.

Graves,[2] on the other hand, found that 76% of 500 cases had backache associated with retrodisplacement of the uterus, and a corrective operation for this condition relieved or benefited 86% of 263 cases he could trace.

MacFarlane[3] states that 16% of 938 gynecologic cases complained of backache. The pelvic findings in 159 of these cases comprised chiefly lacerations, retroversions, prolapse, and inflammatory conditions, such as adherent appendages and endocervicitis. The incidence of marked nervousness in these 159 patients with backache was about 9.3%, or about equal to the incidence of adherent appendages, and half as frequent as that of prolapse. She thinks that the neurasthenic state predisposes to backache of pelvic origin by lowering the resistance of the central nervous system. The fact that the backache was permanently relieved by appropriate gynecologic treatment led to the belief that these backaches were caused by the pelvic condition. Here you have three authorities all agreeing that pelvic conditions cause backache.

One point of interest and importance which Graves makes is that uterine back pain is invariably confined to the sacral or very low lumbar regions.

On the other hand, operations performed to correct pelvic displacement because of backache often fail because the orthopedic or postural defects of the individual are not corrected. It is fair to presume that in a certain number of cases that, had orthopedic measures been carried out first, the operation would not have been necessary.

We now come to a large group of cases which do not fall under any of these previous classes mentioned, but which are very common. These cases may be subdivided into two classes, namely, (1) static or postural strain and (2) sacro-iliac strain.

This brings us to the definition of what is meant by this classification, and I will take them up, therefore, in order.

1. Static or postural strain, not the result of trauma. In an important and interesting paper several years ago Reynolds and Lovett[4] determined the center of gravity of the human body in the upright position, and noted various changes from the normal, and their effects on the posture and musculature. They showed that a forward displacement of the center of gravity put increased work and strain on the back muscles, which, if sufficiently long continued, produced backache and strain; and arrived at the conclusion, from their experimental work, that static backache was the result of definite mechanical defects in the posture.

Now you know that normally in the upright position an individual, when at rest, is supposed to carry his weight on his bones and not on his muscles or ligaments. The center of gravity generally falls in a line running from the tip of the mastoid, through the front of the shoulder, great trochanter, just back of the patella and about an inch in front of the external malleolus. Any variation from this normal implies muscle and ligamentous strain and so pain—therefore, when a person habitually stands with the body in a position of poor posture there is created a lack of normal muscle balance and consequently muscle strain, which is translated into pain. The so-called ''carrying posture'' is a good example of poor standing position. Here the trunk is carried back over the pelvis, the back is rounded and the abdomen protuberant, the low back hollow or flat. Poor postures are seen many times in poorly nourished young people who stand with a slight lateral curvature and a round back and shoulders, and who complain of backache. Other types are those individuals, women especially, who present on examination a hollow back with a marked increase in the normal inclination of the pelvis. Often there is a moderate degree of tenderness along the back muscles and over the sacro-iliac joints. A large number of these latter type of cases complain also of vague pains in the legs and feet. Into this class can be put also those obese individuals who have to lean back to balance themselves, and so by constantly putting extra work on their back muscles, tire them out and stretch their back ligaments and so strain their ligamentous insertions and may strain the sacro-iliac joints. These are best treated by a corset or belt which holds up the abdomen and takes the strain off the back and puts it on a brace or corset. An examination should be made to determine whether or not there is a short leg in all cases, for many cases of backache are due to an unrecognized short leg and can be cured by making the short leg as long as the other one. One other point of the greatest importance is the presence or absence of a short or tight heel cord. Normally, the foot should go about 10° beyond a right angle in dorsal flexion, but you will find that in many of these indefinite backache cases, dorsal flexion even to a right angle is not possible, and an attempt dorsally to flex the foot causes pain all along the back of the leg even extending to the buttock and back. This condition is probably part and parcel of the whole lack of proper muscle balance and posture, but its correction alone will often cure a troublesome and persistent backache. Associated with these tight heel cords, are often feet which are the reverse of flat, in that they present high arches and painful callosities on the balls of the feet. Stretching the heel cords several times a week, which relieves the so-called ''woodeny'' feeling in the legs, with a specially designed machine, and taking the weight off the balls of the foot by means of a plate or an anterior heel, as devised by Dr. Cook of Hartford, which consists in a lift half an inch wide by an eighth to half an inch thick running across the sole of the shoe, just behind the ball of the foot. This acts as a wedge at that point and causes plantar flexion of the toes, and elevation of the metatarso-phalangeal joint and so relieves pain and pressure at that point; and raising the heels of the shoes a quarter to a half an inch will often cure these cases. Raising the heels of the shoes will do several things. First, it will generally please the ladies who dread a low heeled, sensible shoe; therefore their pride is appeased and they begin to think that you are really quite sensible. Second, by so doing, you are taking the strain off the tight gastrocnemius muscle, and so relieving pain. Third, you are tipping the body back as a whole and consequently are relieving the tension on the irritated erector spinae group of muscles and letting up on their bowstring tension. The effect of these simple remedies in suitable cases is remarkable, and the relief from pain and discomfort marked often in 24 hours.

Certain patients I have seen always develop exquisitely tender areas about the buttocks and anus, when their posterior musculature becomes too tight, and one even develops, regularly, anal fissures which promptly clear up after stretching. It is needless to add that proper corsets. which support the strained back muscles and the abdomen well, should be supplied to all these cases. Such a corset should be no longer than the trochanter, should grip the pelvis firmly, should fit the back well, should be no higher than the top of the shoulder blades behind, and the lower ribs in front. It is better front laced, should have a flat abdomen, and is best applied lying down.

This type is common, and I believe they are often called cases of sacro-iliac strain, whereas, to my mind, they have no such condition. If they have the maximum amount of their discomfort over one or both sacro-iliac joints, associated with these other conditions, I believe that it has simply happened that the maximum strain has localized there, and that a strain of the sacro-iliac joint has developed secondarily and is not primary. They will get well under the above course of treatment plus rest and, later, exercises and massage.

There are also many cases of backache seen in poorly developed individuals, whose musculature is poor, whose resistance is low, and whose bodily posture is bad. These cases are the result of the same chain of events—namely, poor posture and lack of muscle development and balance, and are to be treated along the more general lines of developmental work. Many neurasthenics come into this class, but as a rule the backache seen in them is one which is distributed generally all over the back and rarely localized in any one spot.

2. Sacro-Iliac Strain or Sprain. This last class has been before us for a reasonably long time, and has been a popular one in which to put all cases of low backache. The joints have been there anatomically, the tenderness and pain has been situated at or about the joints, and the diagnosis is one easy to make offhand, without much of an examination, and satisfies both the doctor and the patient.

Now it is not to be denied that the sacro-iliac joints are real joints and are subject to such sprains and diseases as are other joints, but that all low backaches should come from these joints seems too good to be true. I think that the explanation offered above in the description of the postural backaches covers a good many so-called sacro-iliac strains. The strains and slippings of the sacro-iliac joint during and following pregnancy are common in everyone's experience and can generally be relieved by proper strapping and a good corset. One word of caution about strapping: always carry the plaster from in front of the anterior-superior spine on one side, to in front of it on the other, pulling it as hard as you can. Also put a felt pad about half an inch thick over the sacrum, extending up the lumbar spine, and you will get better results. Most strapping, as I see it, is inefficiently applied.

Sprains of the sacro-iliac joints are seen after sudden wrenches, especially when the person is bent forward and to the side. They seem to follow twisting strains rather than direct ones, either in the upright or flexed position. Certain cases are accompanied by local swelling and tenderness and, although increased motion and slipping can rarely be detected and the x-rays invariably in my experience prove negative, there is no doubt as to the condition. Associated with these sacro-iliac strains one usually finds more or less pain and discomfort down the back of the leg on the affected side, extending often to the foot and calf. As the condition in the joint improves, this pain in the leg gets well. This is attributed to the pressure on the nerves of the sacral plexus, which lie on the anterior surface of the joint in the pelvis, as shown by Albee[5] and others. This nerve involvement is, I believe, not due to a pressure of the slipping joint, which cannot slip enough to cause such pressure, but may be due to local congestion which involves the tissues about the sacral cord. Slipping in the joint is, I believe, rare in the usual run of cases, and is observed only in those cases where ligamentous relaxation is great, such as is seen after pregnancy and in certain other cases of long duration of poor posture and back strain in rather fat people. I have seen only two such cases where the slipping could be felt, both in obese washwomen, who were so incapacitated finally, that in order to get out of bed they had to roll on to the floor and then climb up on themselves much in the same way a case of Pott's disease or progressive muscular atrophy gets up from the prone position. They were both promptly relieved by strapping and, later, corsets. Certain cases of acute sacro-iliac sprain, often seen following exposure and resembling an infectious or rheumatic attack exhibit the greatest degree of pain and disability. Slipping of the joint cannot be demonstrated, but is felt and described by the patient when it occurs, generally with a twist of the body; the pain is excruciating and often accompanied with nausea or faintness. There is generally some pain down the leg on the affected side, and local tenderness over the joint. There is no mistaking these cases, for the picture is generally complete. Salicylates, rest and strapping often give relief in a few days, plus manipulation in a certain number of cases.

In about 80 cases of painful backs, seen for the Massachusetts Industrial Accident Board, in the last year or two, as the result of injuries, there was only one or two which seemed to be cases of sacro-iliac sprains as against 24 cases of compression fracture of the vertebrae; which is a most common condition and one frequently overlooked.

Two other points in connection with sacro-iliac slipping—relaxation and strain, which I wish to emphasize. First, when there is a real looseness or sprain of these joints, the patient always states that he feels as if he were "breaking in two." This is a common statement and I believe applies to no other condition. Second, in regard to the so-called leg-raising test, so commonly used, I believe it is fallacious, for this reason. Any injury to the lower back which results in back strain causes muscle irritability, which of itself will limit leg-raising with the lower leg extended. This is especially true in the static type of cases and should no more be regarded as a sign of sacro-iliac strain than of flat-foot. It is too frequently associated with other back conditions to be pathognomonic of any one of them.

A word of caution about back pain—never be content with an examination which does not include an x-ray, especially in cases of trauma. It is not difficult to have one made, and will reduce the percentage of guessing and raise the percentage of correct diagnoses.

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Clinical Department.

A CASE OF CEREBROSPINAL MENINGITIS SUCCESSFULLY TREATED BY INTRASPINAL AND INTRAVENTRICULAR ADMINISTRATION OF ANTIMENINGITIS SERUM.*

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The following case of cerebrospinal meningitis presents several features of unusual interest both clinically and therapeutically. In particular, it emphasizes the need of intensive treatment with anti-meningitis serum, not only intraspinally, but if indicated, as in this case, intraventricularly.

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The case is that of a naval lieutenant who was brought to the McLean Hospital May 6, 1917, in a delirious condition, the previous history of which was unknown, even to the immediate family, the patient having arrived at his home in a state of collapse and confusion on the morning of the day of his admission to the hospital, unable to give any account of his experiences up to that time. Later, however, facts came to light which are embodied in the following more detailed history.

The family history shows that the paternal grandmother died of a cancer of the throat. The father died of a cancer of the bladder after the patient's discharge from the hospital. His mother died of cerebrospinal meningitis a week after the patient's admission to the McLean Hospital, having contracted the disease from him after an exposure of a few hours while he was at home, just before his admission to the hospital.

The patient, who is 31 years old, was thought to have had spinal meningitis at the age of 6 months, having had several convulsions for 24 hours. Since that time there has been, however, nothing to suggest the presence of epilepsy or other nervous disorders.

His early life was uneventful. He was appointed to the Naval Academy at Annapolis, from which he graduated in 1907. After graduation he progressed rapidly in the service, and at 21 was given command of a vessel. Some time later he was recommended for promotion, and when taken sick was chief signal officer on the flagship of the squadron.

In January, 1917, he had a severe attack of ptomaine poisoning while attending an official banquet in Haiti. For several days he was in a critical condition. He recovered from the immediate effect of this illness, but did not fully regain his normal strength, though he was able to resume his work. Aside from this illness and its after-effects, he has always been in excellent health.

He was stationed with the fleet when he became sick, and left his ship presumably on May 4 on a 10-days' leave of absence because he felt somewhat nervous and run down. Upon reaching New York he became very ill, but with assistance was able to go from his hotel to take the midnight train for Boston. Before leaving, he wired his family that he would be home the following morning. Reaching Boston, he took a taxicab for his home, and on his arrival was so sick that he had to be helped into the house. After getting into the house he said he was sorry to come home sick, but that he was a nervous wreck and had fainted just after sending the telegram. He appeared to have a chill and went to bed. He seemed dazed and complained of a terrible headache and rubbed his head and moved about very restlessly.

At one o'clock he began to get excited, and thrashed around so much that he broke down the bed and neighbors were called to help care for him, and when the physician arrived at his home he found the patient dazed, pale and much excited. His pupils were equal and the reflexes were normal. He had no fever. He was given some citrate of magnesia and vomited. A quarter of a grain of morphia was given, and at 2 o'clock he was quiet. A little later he became excited again, and a quarter of a grain of morphia and 1/100 of a grain of hyoscin were given, after which he slept.

He was brought to the hospital about 4 o'clock on the afternoon of May 6, well under the influence of hypnotics, and slept for nearly two hours. When seen by the physician, a little after admission, he could not be aroused, was limp and perspired freely. His pulse was 72, of good quality, but quite irregular; respirations were slow and deep. There was questionable rigidity of the neck, but he was so resistive that this could not be accurately determined and was, if present, not constant. The pupils were about 3 mm. in diameter; the left seemed a little larger than the right. They responded to flashlight. The reflexes were everywhere active and equal. At this time a definite Babinski was obtained on the right, but this later disappeared. There was also considerable resistance offered when the leg was raised after the thigh had been flexed. The abdomen seemed quite hard. There was an abrasion of the skin extending along the spine in the lower dorsal and upper lumbar region. He was catheterized and 16 oz. of urine were withdrawn.

During the night he was less somnolent and began making restless efforts to get out of bed. The following morning his temperature was 97 and the pulse 88, and throughout the day he remained delirious, talked about being aboard ship, asking if shell and powder were ready, etc. Momentarily he was clear and made normal responses, and he continued to complain of severe pain in the center of his head and in his back. His temperature remained sub-normal until night, when it rose to 101.8.

On the 8th he appeared very sick. He was rather dull and only semi-conscious. Talking with him seemed to increase his restlessness, which was at all times present. He was not resistive, and complied as well as he could with requests, and always tried to be polite and pleasant. He kept up more or less of a fragmentary talk as he moved about. He apparently tried to answer questions but did not seem able to. Only now and then in his delirium could a relevant response be obtained. Physical examination on this day showed a slight left facial palsy. The left corner of the mouth did not close completely. The tongue pointed to the right. The left cheek seemed fuller than the right. The eyes were prominent, and the tension of the right was possibly a little greater than that of the left. Both pupils reacted promptly to flashlight and accommodation. The left was distinctly larger than the right. The reflexes were everywhere present and active. As far as they could be elicited, there appeared to be no sensory disturbances. There was no ankle clonus, no Babinski and no Kernig's sign. The skin over both the elbows, the knees and buttocks was covered by a punctate eruption. Wassermann examination of the blood was negative. Throughout the day he continued much confused and rambling in his conversation.

On the 9th his condition grew rapidly worse. He was usually delirious, often somnolent, but occasionally cleared enough to give some rational responses. He tried to coöperate when the nurse attended him, but would immediately become stuporous. He appeared to be suffering continuously from severe headache.

In the evening he seemed very weak, and symptoms of meningitis were quite evident. Though he had been passing considerable urine during the day, he was catheterized and 32 oz. of urine were withdrawn. A little later his neck seemed rather rigid, and temperature, pulse and respiration remained high. His pulse became weak, the stupor became deeper, respiration became irregular and shallow, at times distinctly of the Cheyne-Stokes type, and he seemed to be failing rapidly. Dr. W. Jason Mixter was called in consultation, and at 11 p.m. a lumbar puncture was made under primary ether and 10 cc. of a cloudy fluid were withdrawn. Examination of the fluid by Dr. Frederick T. Lord showed the presence of meningococci. At 2 a.m., May 10, Dr. Lord, under primary ether, withdrew 22 cc. of a cloudy fluid and injected 16 cc. of anti-meningitis serum. Almost immediately after the first withdrawal of fluid the patient seemed to rally somewhat. After the injection of the serum his general condition as to heart action and respiration improved, though he remained semi-conscious until about 5 a.m., when he awoke and talked quite naturally with his mother. About an hour later he talked clearly with the nurse and dictated a perfectly coherent, well-expressed and moderately long letter to a superior naval officer. He called the nurse by name and told as much as he could remember of events immediately preceding his sickness.

The next morning he was again stuporous, though his temperature had dropped and his pulse and respiration remained high as before. He could be roused a little, but could only indistinctly mutter a very few words, sinking quickly into unconsciousness again. At this time the asymmetry of the face was not so apparent; the pupils were small and equal and the reflexes showed nothing abnormal. At 9 p.m., under primary ether, 32 cc. of a cloudy fluid were withdrawn by lumbar puncture and 25 cc. of anti-meningitis serum were injected. The cultures of the fluid gave a heavy growth of the diplococcus intracellularis.

On the following day his condition showed improvement, but he was somnolent much of the time. When awake he complained of pain in the back and slight headache. His temperature dropped to normal and the pulse and respiration showed a corresponding improvement. At 7 p.m., 30 cc. of fluid were removed by lumbar puncture, and 25 cc. of serum injected by Dr. Lord. This was attempted under novocaine, but upon injecting the serum the patient complained of very severe pain in the hips and legs, and primary ether anesthesia had to be resorted to. The withdrawn fluid proved to be sterile. Following this operation, the patient's condition again showed rapid improvement. During the night he again developed a slight febrile reaction, though his fever dropped to normal at noon on the 12th.

In the evening his temperature was again somewhat elevated, and under local anesthesia 35 cc. of a cloudy, somewhat bloody, fluid were obtained by spinal puncture, and 30 cc. of serum were again injected under primary anesthesia. For several hours the temperature rose, reaching 104 at midnight. He was very restless and delirious during the night, but during the following day slept for an hour or so from time to time. An examination by Dr. Lord of the fundus of both eyes was practically negative except for slight blurring of the discs. Examination of the ears, likewise, showed nothing abnormal.

The following day his temperature was again elevated and there was very little change in his general condition. On the 15th the situation was about the same. His temperature continued high and irregular, severe headaches continued on and off and the delirium persisted. While he was not losing ground, he was not making much progress.

On the 15th, a lumbar puncture was again made and 14 cc. of a clear fluid were withdrawn and 7 cc. of serum were injected. While clinically this was followed by a temporary improvement, the delirium and irregular temperature persisted for the next few days. The withdrawn fluid was sterile, and it was evident that no further progress could be made by spinal injections.

On the morning of the 18th his temperature again reached 103. His pulse was rapid and the respiration was about 30. With the persistence of the fever and symptoms indicating intracranial pressure, it was very evident that the infection was continuing in the cerebral ventricles, and that the disease process had probably become walled-off. The patient's remarkably favorable reaction after each serological treatment intraspinally gave rise to the hope that if serum could be introduced directly into the ventricles a favorable reaction might be possible. Although precedent determined that in cases of this kind trephining should be a measure of last resort, it was felt that in this case any loss of time meant a fatal termination, or at best a chronic meningitis, and it was decided to operate without delay. On the morning of the 18th, under ether, a trephine opening was made 3 centimeters behind and above the left external auditory meatus; the left ventricle was tapped and 15 cc. of an opalescent fluid, under considerable pressure, were withdrawn. This was replaced by 10 cc. of anti-meningitis serum. The ventricular fluid was strongly infected with the meningococcus. At the same time 10 cc. of fluid were withdrawn by lumbar puncture. This was slightly yellow in color, but clear and sterile. The needle which was introduced into the ventricle was about the size of an ordinary needle used for lumbar puncture, though it was closed and rounded at the end, with two small lateral openings, thus avoiding any cutting of the cerebral tissue. The patient bore this operation very well. In the afternoon his temperature had dropped to 100, his pulse to 90, and it was of good quality. While he was somewhat confused he was free from headache. The following night he was rather restless. In the afternoon his temperature again suddenly rose to 101.5, and the ventricle was again tapped through the same opening; 15 cc. of sterile fluid were withdrawn and 11 cc. of anti-meningitis serum were injected. The following day his temperature again reached 104 by evening. His general condition, however, continued good, and it was felt that, since the left ventricle had been cleared up, the infectious process was going on in the right ventricle, and that the connection between the two was undoubtedly closed by exudate or an inflammatory process, and it was decided the following morning to enter the right ventricle. Dr. Mixter trephined this time over the anterior part of the ventricle, slightly to the right of the median line in the posterior part of the frontal region. The ventricle was tapped and 25 cc. of an opalescent fluid under strong pressure were removed, which again gave a strong growth when incubated. Twenty-two cc. of the serum were injected. Again, a small amount of clear fluid was withdrawn by lumbar puncture. Following this operation, the temperature again rose to 104 in the afternoon. The following day the temperature continued high, and in the evening the right ventricle was tapped again and 40 cc. of sterile clear fluid were withdrawn and 30 cc. of serum injected. At the same time 12 cc. of fluid were withdrawn by lumbar puncture and 10 cc. of serum injected. Following this, he continued to show some general improvement, rested quietly most of the time, complained less of headache, but his temperature, while remaining lower, still showed an irregular course. Owing to the persistence of the symptoms, it was decided to do another intraventricular puncture, and as the patient showed considerable exhaustion and was rather dull and somnolent, it was attempted under local anesthesia. On this occasion a new trephine opening was made in the posterior frontal region, over the left ventricle. The patient bore the operation well, with but little shock and a minimum amount of actual pain. Forty cc. of clear sterile fluid were withdrawn and 25 cc. of serum injected. During the process of trephining, his pulse rose to 164, and suddenly dropped to 80 when the fluid was withdrawn, but as soon as the serum was injected his pulse rose to 124. He complained of headache at the end of the withdrawal of the fluid and also after more than 25 cc. of the serum had been injected. This headache was relieved after the excess of the serum was withdrawn.

Following this operation the patient's general condition improved steadily. While he continued to have a slight elevation of temperature occasionally, he became much brighter, his headache was relieved almost entirely, and when present it was very intense for a short time and then would cease suddenly. As an extra precaution, on June 7 a lumbar puncture was made and 20 cc. of sterile fluid were withdrawn and 10 cc. of serum injected. Examination by Dr. Lord of the eyes and ears at this time showed them again to be practically negative.

In addition to the serological treatment, he was treated by full feeding, at first with chiefly liquid diet, then with solids also, and with large amounts of fluid. There was free catharsis with enemata, ice-bag to the head and internally urotropin and occasionally small amounts of aspirin. During the first few weeks of his illness there was a well-marked polyuria. On several days he passed more than 100 oz. of urine, and it was frequently necessary to catheterize him. On the 7th day of his illness he developed an orchitis, which lasted for about a week and gradually subsided. About a week after the last intraventricular treatment he developed an arthritis (serum disease) which was first noticed in the knees, then the hips, shoulders, elbows and wrists. The pain was quite severe. There was no redness or swelling and the inflammation lasted a few days only in each of the joints, except in the wrists, where the pain was more intense and the duration a few days longer. There were no typical skin lesions at any time, except for the eruption in the dependent parts previously described, and a slight erythema of the ankles about the 4th day of the disease. The stiffness of the neck was noticeable throughout the worst part of his illness, but it gradually disappeared, as well as Kernig's sign. There was partial deafness of both ears during the time of his illness. The hearing in the left ear, however, returned rapidly, though even after recovery the hearing in the right ear had not completely returned. The left facial palsy, which was more or less prominent during his illness, gradually disappeared during convalescence and left no trace. His vision was at no time seriously affected.

On admission there was considerable albumen in the urine with some red corpuscles and hyalin and granular casts, but these disappeared by the middle of May.

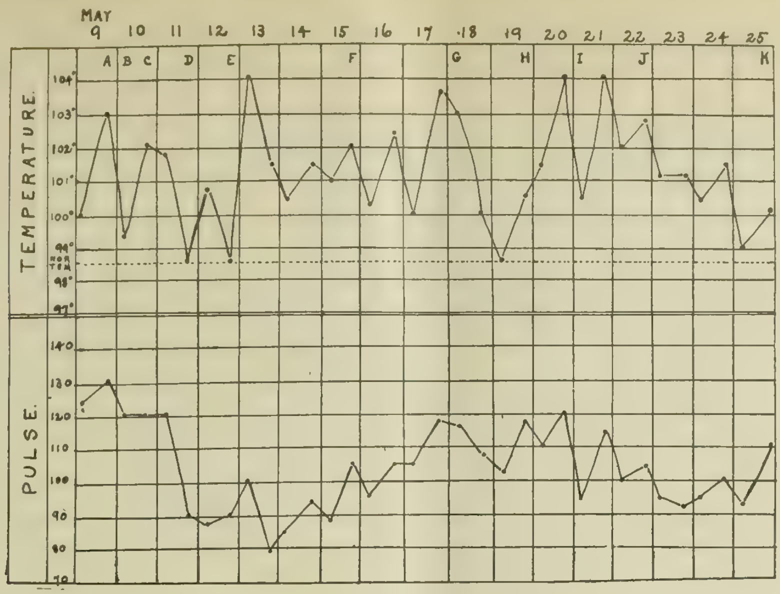
Mentally, there were frequent changes, with comparatively steady improvement, however. He was sometimes quite delirious, disoriented, thinking himself on shipboard, giving directions, having visual and probably auditory hallucinations; within an hour or two he might be quite dull and stuporous, or comparatively clear, recognizing and naming those about him, knowing he was at the McLean Hospital, and trying to coöperate in every way. At such times he would talk quite rationally for a few minutes, showing good orientation and appreciation of his situation. This might be followed by some remark wholly inconsistent with such orientation. He sometimes appreciated these lapses and commented on them. Occasionally he was quite talkative. The periods of complete clearness and orientation increased in length, but even as late as the middle of June, when superficially he seemed perfectly oriented, he occasionally made some wandering remark, which he, however, recognized later as absurd.

During his early convalescence he seemed a trifle dull and sluggish, and not as wide awake as one would expect of a man of his accomplishments, though as he became stronger he became brighter and more alert, and for some time before his discharge he was considered entirely natural by his family. Except for a nerve deafness of the right ear, he was fully recovered upon his discharge from the hospital July 21, 1917.

About the first of December he reported that he felt perfectly well, that he had just passed his medical examination, and that he had been ordered to his ship to report for duty at once, and at present he is presumably with his ship in his former capacity.

While the suggestion has been made by various writers that, on the ground of ventricular block or an obstructive internal hydrocephalus, intraventricular injection of serum appeared to be a rational plan of treatment, no one undertook to treat cases in this manner except in children or in adults *in extremis*. The necessity for intraventricular treatment must be at once recognized and begun early, before a walling-off takes place and before the inflammatory process has done permanent damage, if the treatment is to meet with any measure of success.

Intracranial injection of serum has been done frequently in infants through the fontanelles, and as early as 1908 Cushing and Sladen[1] reported a case of cerebrospinal meningitis in a baby six months old. Five intraventricular punctures were made and serum injected. This was done late in the disease, and while the child seemed to progress favorably, it died after a sudden collapse. They suggest "that it may be advisable in other instances of ventricular obstruction in the acute stages of the disease, to perform, even in adults, ventricular punctures and, if organisms are present, to administer serum, with proper precautions, directly into the ventricle."



Reference to Chart.

	Fluid withdrawn by lumbar puncture	Intraspinal serum injection
A.	10 cc.	
B.	22 "	15 cc.
C.	32 "	25 "
D.	30 "	25 "
E.	35 "	30 "
F.	14 "	7 "
	Fluid withdrawn from ventricles	**Intraventricular serum injection**
G.	Left Ventricle, 15 cc.	10 "
H.	" " 15 "	11 "
I.	Right " 25 "	22 "
J.	" " 40 "	30 "
K.	Left " 40 "	25 "

In a recent issue of the *Journal of the American Medical Association,* Flexner[2] presents a complete résumé of our present conception of cerebrospinal meningitis. He speaks of the frequency of hydrocephalus which arises from interference with the escape of cerebrospinal fluid, usually infected with meningococcus, from the cerebral ventricles, through exudates which are plastered over the exits at the base of the brain. He also suggests that the serum might be safely and even efficiently introduced directly by ventricular puncture.

Chiray,[3] in 1915, recognized that the failure of serotherapy in certain cases of meningococcus meningitis was due to the accumulation of pus in the ventricles of the brain, and while he did not attempt it, suggested that the pyocephalus might be arrested by puncture of the ventricles, if done in time.

Netter's[4] experience was not very encouraging. He treated 12 cases, all infants, intraventricularly, though none recovered. The only adult case he treated in this manner was a woman of 29, who received two intraventricular as well as intravenous injections of serum on the 93rd day of her illness. The patient seemed relieved, but died with symptoms suggesting anaphylaxis.

Labbé and Zislin[5] injected 20 cc. of serum into the ventricles of an 11-year-old child suffering from walled-off meningitis, and four days later administered 8 cc. in a like manner. The injections were well borne and progressive improvement seemed to indicate recovery, but the patient died in syncope. They feel that if the operation had been performed earlier and on both sides, the treatment might have saved the patient.

Other writers refer to the possibilities of intracranial treatment in cerebrospinal meningitis, though in most of the reported cases this measure was employed too late.

We have in this case positive evidence of the therapeutic efficacy of anti-meningitis serum. The remarkable improvement in the patient's general condition immediately following each administration of serum was very striking, not only clinically, but its value was emphasized by the prompt disappearance of the micro-organism from the subarachnoid spaces and ventricles. The treatment must be controlled by bacteriological analysis of the spinal fluid and must be intensively followed up if the symptoms persist and the diplococci remain in the cerebrospinal fluid. After the spinal fluid has been sterile for some time intraspinal serum treatment is no longer indicated. The serum must come in direct contact with the infected area to be of any value, and must be introduced directly into the cavity where the micro-organisms are.

That this procedure was fully justified was evident immediately after the first cranial treatment. There was almost instant relief of the headache, the mental condition improved, and in spite of sterile spinal fluid, the left ventricle contained a cloudy fluid full of diplococci. The four following ventricular taps and serum injections were carried out without special incident or difficulty, and the results fully justified the means.

In this case no unfavorable symptom or shock followed trephining and intracranial medication; on the contrary, almost immediate alleviation of the symptoms was noticed. In fact, on one occasion, trephining was done and the serum introduced into the ventricles under local anesthesia, without any undue pain or shock, and with the advantage that the patient was conscious of intraventricular distention, and helped to control the amount of serum, which was introduced, by the degree of headache.

In fatal cases, autopsies have shown that the micro-organisms are almost invariably found in the cerebral ventricles. In this case the persistence of the symptoms indicated with certainty ventricular block, and that the process was going on in the ventricles.

Cases of cerebrospinal meningitis should no longer be considered as purely medical, and certainly when such cases reach general hospitals the question of surgical interference should be given early and careful thought.

The dread of brain surgery, in general, will undoubtedly deter many from recommending what appears to be a radical operation, the benefits of which are possibly in doubt. However, the procedure is in no way comparable to a major surgical operation on the brain, with its occasional disagreeable complications. A small trephine opening similar to that made for the purpose of intraventricular treatment for syphilis, which is now quite universally carried out, is all that is indicated. In cerebrospinal meningitis the disease is more acute, the treatment is more positive in its effects, and the operation is fully justified in the light of our present knowledge of the disease, where the symptoms indicate cerebral walling off.

Early intraventricular treatment might be expected to diminish the amount of pyocephalus, and with less pus and exudate the dangers of closing important foramina, and thus causing a walling-off or hydrocephalus, may be prevented. It is a question of destroying the micro-organisms before they have had time to produce an intense inflammatory reaction or to have become inaccessible by becoming pocketed off.

Another feature of considerable importance, which throws some light on the infectious nature of the disease and on the period of incubation, of which there is much uncertainty, is the fact that the patient's mother, who was exposed only a few hours while he was at home, after three days developed cerebrospinal meningitis and died a few days later. The patient had not seen his mother for at least six months previous to this time. In most cases the source of the infection is difficult to trace, and cases of direct contagion, while not unknown, are somewhat uncommon. The necessity for strict isolation is, of course, apparent. In the case of the mother, the bacteriological examination of the spinal fluid positively identified the disease, although clinically there was little to suggest it. She suddenly developed a stupor, and if it had not been for the history of exposure the case might have escaped notice.

I desire to express my indebtedness and thanks to Drs. F. T. Lord and W. J. Mixter for their coöperation and valued counsel, which made it possible to bring this case to a successful conclusion.

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[4] Netter, A.: Abst. in Jour. A. M. A., May 13, 1916, p. 1586.
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Book Reviews.

Venesection. By Walton Forest Dutton, M.D. Philadelphia: F. A. Davis Co.

This monograph is intended as "a brief summary of the practical value of venesection in disease for students and practicians of medicine." It is illustrated by several text engravings and three full-page plates, one in colors. The initial chapter presents a history of blood-letting by Dr. Fielding H. Garrison, read before the Medical History Club of Washington, D. C., on December 30, 1911; following this the author continues with a study of blood and lymph hematology, pathologic anthropology and the indications and technic of venesection. The remainder, about three quarters, of the work is an alphabetic discussion of the conditions in which venesection may be of value, from alcohol to viscosity of the blood. Though it is doubtless true that venesection is a procedure of therapeutic value within relatively narrow limits, its encouragement or extensive, injudicious employment is to be regarded with great caution. In many instances the shock of homorrhage overbalances the benefit that may be derived from lowered blood pressure or removal of toxins. It is to be noted that in his description of transfusion the author still advocates the more complicated technic of direct vessel anastomosis, rather than the simplified and highly preferable method developed by Kimpton and Brown. The volume closes with a valuable, though incomplete, bibliography of selected titles.

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ADVANCED RANK FOR MEDICAL OFFICERS.

THE Massachusetts State Committee has recently received from the Council of National Defense, Medical Section, at Washington, the following important letter relative to the Owen and Dyer bills, which deserves careful consideration and as much publicity as possible among the medical profession:

"1. The Owen bill, S. 3748, and the Dyer bill, H. R. 9563, creating advanced rank for officers of the Medical Corps, were introduced in the Senate and House of Representatives Tuesday, February 5. These two bills are identical and are similar to a bill passed some time ago, whereby advanced rank was granted to medical officers in the Navy. According to the present law, the ranks for officers of the Medical Reserve Corps are first lieutenant, captain, and major. According to the Owen and Dyer bills, the ranks, in addition to those just noted, are lieutenant-colonel, colonel, brigadier-general, and major-general. The medical profession has long realized the importance of this advanced standing for physicians serving in the Army, and has felt the great value, to the health and welfare of soldiers, coming through orders given by medical officers of higher rank than those which are now accorded.

2. A recommendation involving the efficiency of the Army, because health is necessary to efficiency, given by a medical officer to a line officer of superior rank, fails to carry weight necessary for such an important recommendation. This has been the experience of many officers in the past, and has been responsible for this demand for advanced rank. The number in the regular Medical Corps now on active duty is 775. Volunteer physicians in the Medical Officers' Reserve Corps to the number of 12,855 are now on active duty. As you well know, physicians of the highest standing in the profession are now in the military service with the rank of major; the Army, therefore, losing the benefit of their experience and knowledge because of a lack of power to enforce their recommendations. Advanced rank carries with it this power.

3. The value of this patriotic service will be greatly enhanced by the early passage of these bills. If you feel, therefore, that more efficient service will be rendered after these bills become law, will you and your medical friends communicate directly with your senators and representatives, preferably by telegraph, using the 'night letter' service, if desired, giving them the benefit of your experience and advice. In matters medical, legislators are both willing and anxious to be guided by the wishes of the medical profession. Will you also present this information concerning these bills to the medical societies of your state and city for their consideration and action, such action to be in the nature of resolutions to be forwarded to senators and representatives as an evidence of the recommendation of the profession on this question?

By direction of DR. FRANKLIN MARTIN.

Committee on States Activities.

General Medical Board—Edward Martin, Chairman; John D. McLean, Secretary; Joseph C. Bloodgood, John Young Brown, Karl Connell, George W. Crile, Richard Derby, John M. T. Finney, Joseph M. Flint, William J. Mayo, Stuart McGuire, Col. R. B. Miller, U.S.A., Col. Robt. E. Noble, U.S.A., Charles H. Peck, Hubert A. Royster, Frederick T. Van Beuren, Jr.

Ex-officio Members—Franklin Martin, Member of Advisory Commission; F. F. Simpson, Chief of Medical Section."

VOLUNTEER MEDICAL SERVICE CORPS.

THE Council of National Defense on February 27 authorized the following statement:

For the purpose of completing the mobilization of the entire medical and surgical resources of the country, the Council of National Defense has authorized and directed the organization of a "Volunteer Medical Service Corps," which is aimed to enlist in the general war-winning program all reputable physicians and surgeons who are not eligible to membership in the Medical Officers' Reserve Corps.

It has been recognized always that the medical profession is made up of men whose patriotism is unquestioned and who are eager to serve their country in every way. Slight physical infirmities or the fact that one is beyond the age limit, fifty-five years, or the fact that one is needed for essential public or institutional service, while precluding active work in camp or field or hospital in the war zone, should not prevent these patriotic physicians from close relation with governmental needs at this time.

It was in Philadelphia that the idea of such an organization was first put forward, Dr. William Duffield Robinson having initiated the movement resulting in the formation last summer of the Senior Military Medical Association with Dr. W. W. Keen as president—a society which now has 271 members.

Through the Committee on States Activities of the General Medical Board, the matter of forming such a nation-wide organization was taken up last October in Chicago, at a meeting attended by delegates from forty-six states and the District of Columbia. This committee, of which Dr. Edward Martin and Dr. John D. McLean—both Philadelphians—are, respectively, chairman and secretary, unanimously endorsed the project. A smaller committee, with Dr. Edward P. Davis of Philadelphia as chairman, was appointed to draft conditions of membership; the General Medical Board unanimously endorsed the committee's report; the Executive Committee, including Surgeons-General Gorgas of the Army, Braisted of the Navy, and Blue of the Public Health Service, heartily approved and passed it to the Council of National Defense for final action; and the machinery of the new body has been started by the sending of a letter to the State and County Committees urging interest and the enrollment of eligible physicians.

It is intended that this new corps shall be an instrument able directly to meet such civil and military needs as are not already provided for. The General Medical Board holds it as axiomatic that the health of the people at home must be maintained as efficiently as in times of peace. The medical service in hospitals, medical colleges and laboratories must be up to standard; the demands incident to examination of drafted soldiers, including the reclamation of men rejected because of comparatively slight physical defects; the need of conserving the health of the families and dependents of enlisted men and the preservation of sanitary conditions,—all these needs must be fully met in time of war as in time of peace. They must be met in spite of the great and unusual depletion of medical talent, due to the demands of field and hospital service.

In fact, and in view of the prospective losses in men with which every community is confronted, the General Medical Board believes that the needs at home should be even better met now than ever. The carrying of this double burden will fall heavily upon the physicians, but the medical fraternity is confident that it will acquit itself fully in this regard, its members accepting the tremendous responsibility in the highest spirit of patriotism. It will mean, doubtless, that much service must be gratuitous, but the medical men can be relied upon to do their share of giving freely, and it is certain that inability to pay a fee will never deny needy persons the attention required.

It is proposed that the services rendered by the Volunteer Medical Service Corps shall be in response to a request from the Surgeon-General of the Army, the Surgeon-General of the Navy, the Surgeon-General of the Public Health Service, or other duly authorized departments or associations, the general administration of the corps to be vested in a Central Governing Board, which is to be a committee of the General Medical Board of the Council of National Defense. The State Committee of the Medical Section of the Council of National Defense constitutes the Governing Board in each State.

Conditions of membership are not onerous, and are such as any qualified practitioner can readily meet. It is proposed that physicians intending to join shall apply by letter to the secretary of the Central Governing Board, who will send the applicant a printed form, the filling out of which will permit ready classification according to training and experience. The name and data of applicants will be submitted to an Executive Committee of the State Governing Board, and the final acceptance to membership will be by the national governing body. An appropriate button or badge is to be adopted as official insignia.

The General Medical Board of the Council of National Defense is confident that there will be a ready response from the physicians of the country. The Executive Committee of the General Medical Board comprises: Dr. Franklin Martin, chairman; Dr. F. F. Simpson, vice-chairman; Dr. William F. Snow, secretary; Surgeon-General Gorgas, U.S.A.; Surgeon-General Braisted, U. S. Navy; Surgeon-General Rupert Blue, Public Health Service; Dr. Cary T. Grayson, Dr. Charles H. Mayo, Dr. Victor C. Vaughan, Dr. William H. Welch.

STATE DEPARTMENT OF HEALTH DRUG BILL.

IN the issue of the JOURNAL for February 14, (page 231) we commented editorially on a bill (House No. 213), then pending before the Massachusetts General Court, relative to the sale and distribution of certain drugs, and aimed primarily at the surreptitious drug-store treatment of venereal diseases. This bill has now been withdrawn and for it has been substituted the following act "relative to the prescribing and compounding of certain drugs":

"Section 1. It shall be unlawful for any person, other than a physician registered under the laws of this commonwealth, to prescribe or recommend to any person any drugs, medicines or other substances to be used for the cure or alleviation of gonorrhea, syphilis or other venereal disease.

"Section 2. It shall be unlawful for any person to compound any drugs or medicines to be used for the cure or alleviation of gonorrhea, syphilis or other venereal disease, from any written or printed formula or order, or upon the prescription of any physician unless the said prescription is signed and dated by the said physician. No such prescription shall be received for filling more than fourteen days after its date of issue, as indicated thereon.

"Section 3. Any violation of the provisions of this act shall be punished by a fine of not more than one thousand dollars or by imprisonment in a house of correction or jail for a term not exceeding one year, or by both such fine and imprisonment."

The striking points of this new drug bill are that it forbids compounding medicines for the cure of venereal diseases except on a physician's prescription; that no prescription shall be received for filling more than 14 days after its date of issue; and that the use of printed formulae is forbidden. This prospective act, like the one which it replaces, may be regarded as an attempt, not only to protect the public, but to secure for them the most effective possible treatment for this group of ailments, and its passage is earnestly to be desired and advocated by the medical profession.

ANNUAL REPORT OF THE SURGEON-GENERAL, U. S. NAVY, 1917.

THIS comprehensive report contains very interesting and instructive information regarding the various branches of the Bureau of Medicine and Surgery of the Navy Department. A few paragraphs are devoted to important subjects, including the medical and dental corps, the American Red Cross, emergency hospital construction, Council of National Defense, aviation, the hospital corps, the nurse corps, schools, medical supply depots, hospital and ambulance ships, sanitary conditions ashore, naval hospitals, recruiting and health of the Navy; considering each subject in its relation to the Navy Department. The latter half of the report is given over to short tables illustrating the subtitles, and to long and detailed tables showing comparisons of diseases during several years and comparisons of mortality. These are followed by statistics which include a detailed statement of diseases and injuries for the calendar year 1916, the distribution among occupational groups, the deaths, invalidated from the service, surgical operations, dental operations, recruiting statistics, and the financial statement of the total cost of maintenance and average cost *per diem* for maintenance and subsistence at naval hospitals for the fiscal year 1917.

"For a considerable time prior to the declaration of war, and while yet this contingency seemed remote and improbable to many, this bureau instituted steps for preparation against such a development. The commanding officers of hospitals were directed to consider all the features of a possible situation calling for large increase in their equipment, and were directed to make tentative plans for installation of tents, beds and cots to permit the maximum expansion. Plans were definitely completed for utilizing these institutions to their utmost capacity. Likewise, in the matter of stores, the bureau has been acquiring large quantities of drugs, surgical dressings, and appliances for issue from the various medical supply depots. The individual hospitals and ships also largely increased their reserve supplies, so as to be ready for any emergency.

In addition to the facilities thus provided and being provided in naval institutions, properly so called, the medical officers in command of the various naval hospitals have been busily engaged in organizing the naval hospital bases and arranging for adjuncts to them, such as civilian hospitals, municipal hospitals, private institutions, either to provide for evacuation on overflow of naval hospitals or to receive patients direct."

"Upon declaration of war the medical service to be rendered to all personnel of all forces was promptly organized in accordance with prepared plans, particularly with attention to naval districts and naval hospital bases. This organization consists of two divisions—dispensary service, general and hospital service, central.

The dispensary service, under the charge of the medical aid to the commandant of each naval district, was developed to serve the many outlying stations for patrol, aero, radio, and other forces. Dispensaries, or temporary sick quarters, were established, equipped, and manned with proper personnel at all places where the need existed.

The hospital service, under the charge of the medical officer in command of the naval hospital in each district, was developed upon a naval hospital base, the established naval hospital being surrounded by adjuncts in the form of temporary structures, tents, buildings converted to hospital purposes, United States Public Health Service or civil hospitals, to accommodate patients for whom, for any reason, there might be no accommodations within the naval hospital itself. The medical officers in charge of both divisions of medical work have perfected the general plans, and have made complete arrangements at all stations for adequate care and treatment of the sick and wounded should they be received in large numbers."

"Work has been rapidly pushed on all construction, and many of the emergency hospital buildings are equipped and fully ready for occupancy. The expansion of the hospitals has resulted in a great increase of work for the chief nurses of hospitals, and greater efficiency would result from the appointment of an assistant chief nurse at each hospital, with an increase of pay proportionate to the duties which would be indicated in this position. A field of activity which has been developed during the past year has been the class work in connection with the instruction of hospital corpsmen, and especially qualified nurses have been appointed with a view to systematizing the method of instruction in the various naval hospitals."

"The work of the Sanitary Division extends to the field. An officer of the Public Health Service is detailed to each naval district, where his principal function is to study and direct sanitary measures in the regular naval establishments and their environments."

It is impossible to quote from this report sufficient of the valuable statements to show the distinct value of the publication. One can only recommend that it is worthy of a careful perusal.

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THE NEW HEALTH COMMISSIONER OF MASSACHUSETTS.

In the issue of the Journal for February 21 we published comments on the loss the State had sustained in the return of Health Commissioner Allan J. McLaughlin to Washington, to become Assistant Surgeon-General in the United States Public Health Service, he having been loaned to Massachusetts in 1914 to inaugurate new methods, and to put our health department on a different footing. The Governor has nominated and the Council confirmed the appointment of Dr. Eugene Robert Kelley, who is now the commissioner, being advanced from the position of director of the Department of Communicable Diseases in the department. Dr. Kelley was a graduate of the Medical Department of the Johns Hopkins University and an interne at the Carney Hospital. Thence he went to the State of Washington to become assistant health commissioner and then commissioner of health, so that he assumes now a similar office in Massachusetts. That he has shown commendable energy in the conduct of the Department of Communicable Diseases is common knowledge, and there is every reason to believe that he will continue the policies of his predecessor, thus maintaining the high standards and best traditions of state service to the public health, for which Massachusetts has long been famous. The Governor and the citizens of the State are to be congratulated on this wise appointment.

MEDICAL NOTES.

Distribution of Blank Forms for the Notification of Cases of Syphilis and Gonorrhea.—Owing to freight embargoes and the seizure of paper by the U. S. Government designed for the printing of certain of the forms to be used in notifying the State Health Department of cases of syphilis and gonorrhea, the printer was unable to fill his contract to supply this Department with the full quantity of the necessary forms in time to distribute them to physicians throughout the Commonwealth prior to February 1, 1918, when these diseases became reportable. As quickly as the various lots of the necessary supplies are delivered to this office, however, they are sent out, and it is hoped that by the fifteenth of March all registered physicians in the State will have received the requisite blank forms for the handling of reports of cases of syphilis and gonorrhea.

Eugene R. Kelley, M.D.,
Commissioner of Health.

Prevalence of Tuberculosis in the United States.—On February 25 the National Association for the Study and Prevention of Tuberculosis issued in New York a statement to the effect that within the next two years at least 50,000 more tuberculosis hospital beds will be needed in the United States to make possible the adequate control of the disease under war conditions. At present only 43,000 beds are available for this purpose in the entire country.

"The estimate is based on a revised conception of the prevalence of the disease, as the result largely of the examination of recruits and drafted men for our new Army and Navy. Until recently it was estimated that for every death from tuberculosis in the country there were five active cases of the disease. It is now believed that the true ratio is twice or three times as great. Instead of about 1,000,000 active cases in the country, there are probably between 2,000,000 and 3,000,000.

These results are corroborated, says the statement, by unofficial deductions from the records of the first year of the community health demonstrations being carried on at Framingham, Mass., by the National Association. About 5000 persons, or about one-third of the population of Framingham, have been rigidly examined, including all classes, and out of these approximately 160 definite cases have been discovered.

The average annual death list in Framingham from tuberculosis is 15. If not another case of the disease should be found on examining the rest of the population, this would give a ratio of disease to death twice as large as formerly estimated."

Award of Victoria Cross.—In the *Lancet* is noted the recent award of the Victoria Cross to the late Capt. John Fox Russell, M.C.R.A.M.C., attached to the Royal Welsh Fusiliers, "for most conspicuous bravery displayed in action until he was killed. Captain Russell repeatedly went out to attend the wounded under murderous fire from snipers and machine guns, and in many cases, where no other means were at hand, carried them in himself, although almost exhausted. He showed the highest possible degree of valor."

British Birth and Death Rates.—On February 21 were published in London the vital statistics of England and Wales for 1916, showing a reduction of 4½% in the marriage rate that year, and the lowest death rate ever recorded for children under one year of age.

"There was in 1916 a notable increase in the proportion of marriages of young widows under 30 years of age, which greatly increased result is due to the war. The proportion of the total population to the birth rate was 20.9 per 10,000 living. The reduction in births amounted to only 12%, whereas in Germany the fall is reported to have been 40% for the two years 1915-1916, and in Hungary 56%. In England and Wales the births of males numbered 402,137, of females 383,383. The report states it will be possible only after the war to determine to what extent the old idea that war conditions lead to male conceptions, has been justified by the huge experiment now in progress. The excess of births over deaths was 277,303. The number of fatal casualties incurred by English and Welsh troops during the year, says the report, must have been very much lower than 277,303, so the increase in population must have continued. German statistics record 1,331,000 deaths in 1916—apparently exclusive, at least, of the great majority of fatal war casualties—against 1,103,000 births. The Hungarian figures are for deaths not in action, 428,057, against 333,551 births."

WAR NOTES.

Measles Quarantine.—Five cases of measles among members of the Coast Artillery Guard units at the Waterships Branch of the Springfield Armory have caused the placing of the guard camp under strict quarantine.

Treatment of Shell Shock at Columbia University Base Hospital.—Public announcement has been made that the United States Army Men's Hospital No. 1, better known as Columbia University Base Hospital, has already harbored 650 patients. Plans are under way so that 5000 men may receive treatment there at one time. An experiment in the non-medical treatment of shell shock is under way. This consists of a concert which is designed to show the effect of music upon men whose nerves have been shattered by the high-tension strain of trench life, and who have thus been brought to any one of that variety of conditions described as "shell shock," although the term is not confined to the conditions brought on by the explosion of shells.

BOSTON AND MASSACHUSETTS.

John White Browne Scholarship at Harvard.—A new medical scholarship has been established at Harvard under the will of Rebecca A. Greene, which is to enable a young man of unusual promise to pursue his research investigations for one year at Harvard or elsewhere. Eighteen thousand and five hundred dollars was given for this purpose in memory of John White Browne, who was a member of the Harvard class of 1830.

Week's Death Rate in Boston.—During the week ending February 23, the number of deaths reported was 298, against 295 last year, with a rate of 19.81, against 19.91 last year. There were 50 deaths under one year of age, against 31 last year.

The number of cases of principal reportable diseases were: diphtheria, 66; scarlet fever, 27; measles, 143; whooping cough, 35; typhoid fever, 2; tuberculosis, 59.

Included in the above were the following cases of non-residents: diphtheria, 8; scarlet fever, 5; measles, 1; typhoid fever, 1.

The total deaths from these diseases were: diphtheria, 11; scarlet fever, 1; measles, 2; whooping cough, 2; tuberculosis, 29. Included in the above were the following non-residents: diphtheria, 7; whooping cough, 1; tuberculosis, 2.

Massachusetts State Nurses' Association.—The midwinter meeting of the Massachusetts State Nurses' Association was held Saturday, February 16, 1918, in the Assembly Hall of the Walker Building, 525 Boylston Street, Boston. In the morning the Massachusetts State League of Nursing Education met at 10.30 and the Private Duty Nurses' League met at 12.30. The afternoon meeting was in charge of the State League of Nursing Education, Miss Emma M. Nichols, R.N., presiding. Two papers were presented, "Plane of Training Schools in the Nursing World" and "Training of Student Nurses."

In Honor of Dr. McLaughlin.—A dinner was given Thursday evening, February 21, in honor of Dr. Allan J. McLaughlin, who has resigned as commissioner of health in Massachusetts, in favor of an appointment as Assistant Surgeon-General in charge of Division of Interstate Quarantine in Washington. Dr. McLaughlin was assigned to Massachusetts by the United States Public Health Service four years ago, to direct the reconstruction of the State Department of Health from an unpaid board to the more modern system of public health administration, which places the functions of the State Department of Health under the control of one executive with an advisory council.

Hospital Bequest.—By the will of the late Mrs. Maria Louise Harlow Peirce, a bequest of $100,000 is made which is to be used as a fund for the erection of a hospital in Middleboro, Mass. This hospital is to be known as St. Luke's Hospital and the fund is to go under the designation. "The Harriet Rice, Judith Peirce and Nabby Sproat Peirce Memorial Fund."

Obituary.

HARRY MADISON CUTTS, M.D.

Dr. Harry Madison Cutts died of pneumonia at his home in Brookline, February 21, 1918. He was a native of Washington, D. C., where he was born September 4, 1858, the son of Richard D. and Martha Jefferson Hackley Cutts. In 1880 he was graduated from Princeton with the A.B. degree and in 1883 from Harvard Medical School, Princeton giving him an A.M. the same year.

From 1885 until 1887 Dr. Cutts practised his profession in Washington, and since then he had lived and practised in Brookline. While in Washington he was, in 1884, superintendent of the Garfield Memorial Hospital. In his professional career Dr. Cutts had served as surgeon for the Naval Brigade, M.V.M., and at the time of his death he was medical examiner of Norfolk County. He was a member of the Massachusetts Medical Society and was the medical member of the draft selection board in Brookline, where he belonged to the Thursday Club and the Country Club. He was married in Randolph, on November 18, 1891, to Marion Belcher, by whom he is survived, as he is by a daughter, Dorothy Madison Cutts, and a son, George Belcher Cutts, who is in service in the Aviation Corps.

Miscellany.

REHABILITATION OF DISABLED SOLDIERS AND SAILORS.

I.

THAT 100,000 out of every 1,000,000 soldiers sent overseas will return to the United States during the first year of fighting, and that 20,000 of these will need some kind of vocational re-education or rehabilitation, is the estimate made by the Federal Board for Vocational Education in a report just published as Senate Document 166.

"Long before the close of activities in the summer of 1918, the return of men will begin, and vocational re-education must start with the first men sent back, and must be developed as the number of men in hand for training increases," declares the report. "The development of facilities for undertaking vocational re-education must, in fact, anticipate the return of the men, since adequate provision cannot be improvised after the men are actually in hand for training."

A comprehensive federal system for the re-education and placement in wage-earning occupations of every disabled soldier and sailor is presented by the federal board. This plan involves a central administrative agency at Washington, the coördination with that agency of every federal and state agency concerned and with similar public, semi-public and private agencies, the establishment of "curative workshops" for the treatment of war cripples, together with a complete system providing for subsistence and pay during the period of re-education.

Basing its opinion on foreign experience, the report declares that "vocational rehabilitation cannot be regarded as costing the community, except temporarily, anything whatever. The disability of the soldier or sailor is an economic handicap, reducing productive power. Unless the men are vocationally re-established, and to the extent that they are not completely re-established, the economic loss to the community will be cumulative during a long period of years. Even a slight increase in vocational capacity, as a result of vocational training initiated during the period of convalescence, will result in an economic gain which, also, will be cumulative over a long period. This aggregate cumulative gain will certainly exceed any expenditures for vocational rehabilitation."

The increase of the earning power of the handicapped man, thus rendering him economically independent, is the ultimate object of this program.

The plea is made that "all the experience and all the special equipment required for emergency war work will be needed to provide for similar work in the vocational rehabilitation of men disabled in factories and workshops, of the victims of accident in all dangerous employments, and of the thousands of otherwise injured and crippled persons thrown upon the community each year. The number of such persons in normal times greatly exceeds the capacity thus far developed for their vocational rehabilitation.

In addition to the above, it discusses methods of financing, organizing, and administering a national system of vocational rehabilitation; foreign experience and legislation are reviewed; and the proceedings of an inter-departmental conference held on the subject in Washington are summarized, together with suggested legislation.

II.

The vocational and educational problems involved in the rehabilitation of disabled soldiers and sailors are analyzed and discussed by the Federal Board for Vocational Education in Senate Document 167, just published under the title, "Rehabilitation of Disabled Soldiers and Sailors—Training of Teachers for Occupational Therapy."

Emphasis is placed on the immediate and pressing demand for the training of teachers of occupational therapy to take care of the handicapped men on their return from France. It is estimated that for every 1,000,000 men overseas, a minimum of 1200 teachers will be needed. What must be the qualifications of these teachers in view of the experience of the belligerent countries; how they may be trained; what problems are to be met; and how they are to be met in the course of vocational rehabilitation; the social and economic aspects of rehabilitation; and the need for a national system for the rehabilitation of the maimed and crippled in industry, as well as in war, are the main topics of the bulletin. The document is written by Elizabeth G. Upham, under the direction of Charles H. Winslow, assistant director for research of the Federal Board.

The emergency program outlined in the report is summarized as follows:

The returned disabled men are divided into four classes: 1, those who are permanently invalided; 2, those who are able to work, but cannot engage in competitive occupations; 3, those who must learn new occupations in the light of their handicaps; 4, those who are able to return to their former occupations. About 80% of all the disabled fall into the fourth group, and about 20% into the third group. The first two groups are relatively small.

For Group 1 the treatment prescribed is "invalid occupations," which are occupations that help pass the time and save the patient from brooding. For Group 2, those who will, in all probability, be unable to compete in any line of work, simple occupations are prescribed, to be carried on under the guidance of occupational therapeutists. Such occupations as wicker furniture-making, chair-caning, toy-making and semi-trades, will be taught these men.

For the 20% who must learn new occupations, a more elaborate course of rehabilitation is suggested. This will include simple occupations such as are taught to the men of the second group, followed by courses in general education wherever necessary, and followed in turn by prevocational education, that is to say, elementary vocational education; and, lastly, by vocational education in whatever line is best adapted to the qualifications and handicap of the man.

A similar curriculum is proposed for the 80% who will probably be able to return to their old occupations. Under the lead of the occupational therapeutist, the patient will be gradually taught simple occupations, his general education will be "brushed up," and the deficiencies supplied, and he will be re-educated so as to resume his former trade in spite of his handicap.

The Federal Board presents in this bulletin an outline of an emergency course covering eight weeks for the training of teachers to handle all four groups of disabled men. It is expected that a fraction of the disabled men themselves will serve as instructors. Nurses and teachers of arts and crafts will be available for the invalid occupation work; trained and selected women of education, with previous experience in the arts, crafts and the "semi-trades," will be drawn on to teach simple occupations to Group 2. In addition to these, there will be need in Groups 3 and 4 of vocational teachers, preferably men, and men and women teachers, in general educational subjects, instructors in manual training, commercial subjects, mechanical drawing, drafting,etc. Teachers of each group should have had practical experience in hospitals or institutions, and it is recommended that teachers in Groups 3 and 4 should have experience in the same line of work in the military hospitals of Canada.

That every dollar invested by the Government in the vocational rehabilitation of disabled soldiers and sailors will bring handsome returns in national efficiency is maintained in the report. "If the war should finally end in economic exhaustion," says the report, "that nation will ultimately triumph which is best able to use over again her men. It is claimed that Germany uses 85 to 90% of her disabled men back of the lines, and that the majority of the remaining 10 to 15% are entirely self-supporting. Belgium, whose depletion has been the greatest, was the first nation successfully to use over again her men. Not only has the large Belgium re-education center of Port Villez been self-supporting, but in addition, it has paid back to the Belgian Government the entire capital cost of installation

"Economic necessity has made possible the results achieved in Belgium. For the other nations, not so hard pressed, the rehabilitation of the disabled and the strengthening of the vitality of the civil population may be an important and perhaps a determining point in their economic future. . . It is certain that our own economic future depends, to a large extent, upon the rehabilitation of those disabled both in war and industry."

The bulletin discusses at length the possibilities of development of occupational therapy and the equipment needed for all the groups described. Suggested blanks for keeping the records in the curative workshops and for hospital registration are included.

VENEREAL DISEASE AS A MENACE TO THE NATION.

The American Social Hygiene Association has recently issued the following brief, showing the seriousness of the problem of venereal diseases and their relation to the war, and the responsibility of civil communities for conditions in the Army. The Council of National Defense urges public officers and citizens of the United States to employ every means possible in the repression of prostitution and the control of venereal disease, for the following reasons:

First, because we must prevent such conditions as have developed in Europe since the beginning of the war.

(1) "The number of syphilitics in the Army must certainly be several hundreds of thousands . . . Since the war began, a total equivalent of sixty divisions have been temporarily withdrawn from the fighting for venereal diseases (Vienna report).—*Journal of the American Medical Association,* March 10, 1917, Vol. 68, No. 10, p. 814.

(2) "During the first eighteen months of war one of the great powers had more men incapacitated for service by venereal disease contracted in the mobilization camps than in all the fighting on the front."—*Social Hygiene,* Vol. 3, No. 2, p. 205.

(3) "In the war zone of France there has occurred an alarming increase of venereal disease, both amongst the soldiers and the civilian population."—*The Medical Officer* (London), No. 499, March 3, 1917.

(4) "The failure of the. . . Government to protect their soldiers from these evils (sexual vice and alcoholism) is the gravest error that the Government has committed; for these vices have proved more destructive to the. . . people since August, 1914, than all the. . . artillery, rifles, hand grenades, poisonous gases and fire blasts. Those killed by shot and shell transmit no poison to their families and descendants—the victims of alcohol and prostitution do."—From a letter by President Emeritus Charles W. Eliot of Harvard University, quoted in the *Survey* of Sept. 8, 1917.

(5) "Thousands upon thousands are withdrawn from the fighting army for weeks. But they are not only missed as fighters; they also cause expense and great obstruction through their transportation back home, through the necessity of establishing hospitals for thousands who were not wounded by the enemy. They burden the doctors so necessary for the care of the wounded. . .

"But the very worst part of the venereal diseases is not the diseased condition immediately following infection, but the ailments frequently developing in later years, when the war is long past and the old infection already forgotten, and the transmission of the disease to the family after the return of the troops to their homes."—Prof. Albert Neisser, *Frankfurter Zeitung,* January, 1915.

Second, because serious conditions have already developed in the United States Army, due largely to conditions in civil communities.

(1) "At one National Guard Camp, 502 new cases of venereal disease were reported in one week."—*Official Bulletin,* Nov. 20, 1917, p. 6.

(2) It was found that most of the cases at one large cantonment originated, not in the camp or near the camp, but in civil communities from which the men came or through which they passed on the way to camp.

(3) "In the case of all the troops on the border, a vastly larger proportion of venereal disease was contracted before reaching the border than was contracted afterwards."—*Social Hygiene,* Vol. 3, No. 2, p. 220.

Third, because the War Department has asked our aid.

(1) "Our responsibility in this matter is not open to question. We cannot allow these young men. . . to be surrounded by a vicious and demoralizing environment, nor can we leave anything undone which will protect them from unhealthy influences and crude forms of temptation."—Secretary of War Baker in his letter of May 26, 1917, to Governors of all States.

(2) "We are not going to be able to obtain the conditions necessary to the health and vitality of our soldiers, without the full coöperation of the local authorities in the cities and towns near which our camps are located or through which our soldiers will be passing in transit to other points."—*Ibid.*

Fourth, because venereal diseases result in the infection of innocent women and children.

(1) "No disease has such a murderous influence upon the offspring as syphilis; no disease has such a destructive influence upon the health and procreative function of women as gonorrhea. . . Inherited syphilis constitutes a powerful factor in the degeneration of the race."—Prince A. Morrow, M.D.: Social Diseases and Marriage, Chap. 1.

(2) "All previous war experience shows an increase of venereal disease. . . When peace comes there is the danger of grave and widespread dissemination of these diseases. It is for that, that we must be prepared, and there is not time to be lost."—Report of National Conference for Combating Venereal Diseases (London). *Social Hygiene,* Vol. 3, No. 2, p. 235.

Fifth, because prostitution is not a "necessary evil."

(1) "Sexual intercourse is not necessary to preserve health and manly vigor."—Moss: Manual of Military Training, Section 1466, p. 522. See also statement signed by Walter B. Cannon, M.D., Harvard University; William H. Howell,

M.D., Johns Hopkins University; and 355 other foremost medical authorities in the United States.—M. J. Exner, M.D.: The Physician's Answer (Association Press, New York), pp. 14, 24-51.

Sixth, because the "restricted district" and other attempts to regulate prostitution, have proved ineffective.

(1) See Flexner: Prostitution in Europe, pp. 175-6, and the reports of Vice Commission in Chicago, Minneapolis, Syracuse, Philadelphia and many other cities.

Seventh, because repression is the only feasible method.

(1) "The only practical policy which presents itself in relation to this problem is the policy of absolute repression, and I am confident that in taking this course the War Department has placed itself in line with the best thought and practice which modern police experience has developed."—Secretary of War Baker in his letter of August 14, 1917, to Mayors and Sheriffs.

(2) "This policy involves, of course, constant vigilance on the part of the police, not only in eliminating regular houses of prostitution, but in checking the more or less clandestine class that walks the streets and is apt to frequent lodging houses and hotels."—*Ibid.*

Eighth, because it will be better to handle the situation locally and thus make military interference unnecessary.

(1) One commandant issued orders forbidding all use of intoxicating liquor and all patronizing of immoral resorts. Every woman who got off a train was watched until her business was known. If necessary, she was put out of the vicinity.—*Social Hygiene,* Vol. 3, No. 1, p. 155, also Association Press (New York), April, 1917, p. 379.

(2) "If places of bad repute spring up outside the five-mile limit, but fairly accessible to the camp, I shall not hesitate to insist upon their elimination."—Secretary of War Baker in his letter of August 14, 1917, to Mayors and Sheriffs.

TETANUS IN BRITISH HOME MILITARY HOSPITALS.

The *British Medical Journal* has recently published the following analyses of cases of tetanus treated in home military hospitals. The first covers November and parts of October and December, 1916, and deals with the first one hundred completed cases since the latest previous analysis was made.

"During the four periods analyzed the rate of mortality has steadily gone down. In the first group the mortality was 57.7%; in the second 49.2; in the third, 36.5; of the present series of 100, 69 recovered—mortality 31%. The ratio of cases of tetanus to the number of wounded soldiers treated in home military hospitals was, roughly, six times as high in September, 1914, as it was two months later; and it remained at or about the lower level until the end of 1916. This fall in ratio was undoubtedly due to a great extent to the introduction of prophylactic injections of antitetanic serum, which took place about the middle of October, 1914.

The present series shows once again that the shorter the incubation period the greater the mortality rate, and vice versa. There were only twelve cases with a short incubation period (that is, up to ten days), and sixty cases with an incubation period of more than twenty-two days; the shortest incubation period was seven days, and the longest 190. Since the beginning of the war there has been a diminution in the number of cases with short incubation periods, and a corresponding increase in the number of cases with long incubation periods. This is a measure of the action of the prophylactic inoculation of antitoxin.

Sir David Bruce points out that it is sometimes by no means easy to decide whether a case is one of localized or generalized tetanus. He defines general tetanus as that in which spasticity or rigidity occurs in muscles distant from the site of wound, trismus being the most common initial symptom in this form; in local tetanus the spasticity or rigidity is confined to the muscles in the neighborhood of the wound. He looks on local tetanus as a much modified variety of the original disease, or even as a new type due to the action of the prophylactic injection. In general tetanus the toxin molecules may be pictured as gaining entrance to the circulation, and so reaching all parts of the nervous system. Of the 100 cases under review, 61 could be placed in the general, and 28 in the local group; in the remainder there was doubt. In the 61 cases of generalized disease there were 21 deaths—mortality 34.4%. All the cases of localized tetanus recovered. Trismus was recorded in 54 of the generalized cases, opisthotonos in 17.

With regard to operative interference, the Tetanus Committee advises that when operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum should always be given; further, they consider it probably safer to abstain from surgical interference with the wound until the ordinary treatment for tetanus has been carried out, unless there are other and imperative reasons for immediate operation. When the symptoms of the tetanus have subsided, and the tissues are flooded with antitoxin, then the wound can be opened up and searched for foreign bodies or hidden collections of pus and tetanus bacilli.

Of the 100 cases, 61 were noted as having received a prophylactic injection in France; of these 51 recovered—mortality 16.4%. Of the remaining 39 cases, 22 were not recorded to have had prophylactic treatment, though probably many received it; of these 12 recovered—mortality 40.5%. Of the remaining 17 patients who had no prophylactic injection of any kind, 6 recovered—mortality 64.7%. The number of patients treated with antitetanic serum after the onset of symptoms was 98, of whom 68 recovered—mortality 30.6%. Of the two cases which did not receive therapeutic treatment with serum in England, one recovered and the other died.

Once again the analysis of the cases furnishes no evidence either for or against the intrathecal route. It will be remembered that in the first year of the war the figures seemed to show that this route showed advantage over others. Analysis of the figures relating to dosage likewise furnishes no useful deduction as to the curative influence of this factor.''

The second analysis, being the fifth in the entire series, covers the remainder of 1916 and the first quarter of 1917.

''The numbers of cases of tetanus dealt with in the five periods, and the rates of mortality, are given in the following table, which speaks for itself:

Analysis	No. of Cases	Recovered	Died	Mortality Per Cent.
1914-15	231	98	133	57.7
1915-16	195	99	96	49.2
Aug.-Oct., 1916	200	127	73	36.5
Oct.-Dec., 1916	100	69	31	31.0
Dec., 1916-Mar., 1917	100	81	19	19.0

In the second analysis the statement was made that 'early treatment should be striven for, and if this were done and the antitoxin applied thoroughly, one would not despair of reducing the mortality to, say, 20%, instead of 50%, at which it stands for the past year.' It will be seen that this ambition has been more than realized so far as the returns of the last 100 cases are concerned. This large reduction in the death rate is most satisfactory, but Sir David Bruce wisely refrains from expressing an opinion as to whether it has been due to the specific treatment or to one of the several other factors involved. Whatever be the cause—the prophylactic dose of serum, better surgical treatment, quicker diagnosis, more thorough therapeutic treatment—the result is gratifying.

Referring to the factor of surgical treatment, it is pointed out that if this could be made entirely successful, by cleansing and sterilization of wounds at the outset, there would be no more cases of tetanus; but while there is some evidence of an improvement in surgical technic much remains to be done. The present analysis repeats and brings up to date figures showing the number and distribution of cases of tetanus treated in home military hospitals since the beginning of the war.

Among the last 100 cases we find that where the symptoms of tetanus appeared within ten days of receiving the wound, the mortality was 40%; where they appeared between the eleventh and twenty-fourth day, it was 25%; in the remaining 66 cases, with an incubation period greater than twenty-five days, the mortality was 13.6%. In one patient the incubation period was stated as 786 days; but this for various reasons is regarded as a doubtful case which should be ignored for statistical purposes, although, as Dr. Goadby has shown, the tetanus bacillus may remain for a long time quiescent at the site of old wounds. Disregarding this case, the longest incubation was 365 days, and the shortest three days.

Since the beginning of the war the average incubation period has been steadily lengthening. This should probably be attributed in the main to the prophylactic injection of antitoxin. In the first year of the war 47% of cases had a short incubation period; in the last analysis this had fallen to 10%. Correspondingly, the percentage of cases with a long incubation period has risen from 6.4 to 69.

In our summary of the last analysis (September 15, 1917) we printed Sir David Bruce's working definitions of general tetanus and local tetanus. In the present series it was found on examination that 81 cases could be placed in the general group, and 19 in the local group. Among the former there were 58 recoveries and 23 deaths, giving a mortality of 28.3%. All the cases of localized tetanus recovered. There is no evidence to support the view that the presence of a fractured bone complicating the wound is a source of danger heightening the death rate from tetanus.

In six of the cases tetanus is reported to have followed an operation, and one died. In none of these was a prophylactic inoculation of antitetanic serum given before the operation, although the advice of the Tetanus Committee is that this should always be done. As in each preceding series of cases, the mortality among patients who had received no prophylactic injection in France was considerably greater than among those so protected. It should be noted here that the present policy advocated by the Tetanus Committee of the War Office, is that four prophylactic injections should be given to every wounded soldier at intervals of seven days, but in periods of hard fighting this might sound a counsel of perfection.

The whole of the 100 cases under review received therapeutic doses of antitetanic serum; in the preceding series all but two were so treated. The considerable reduction in the mortality, from 31 to 19%, would not appear, therefore, to be due to this factor, and, as Sir David Bruce states in his conclusions, the evidence as to the therapeutic effect of antitetanic serum is still inconclusive. Once again the figures furnish no case, either for or against the intrathecal route as compared with other methods of injection; similarly, from the figures relating to dosage no useful deduction can be drawn."

AMERICAN HOSPITALS AND SURGEONS IN FRANCE.

The *Lancet* has recently published the following editorial comment on the work already accomplished by American hospitals and surgeons in France since the outbreak of the European War. The eulogistic character of this comment will be gratifying to American professional pride and should be a stimulus to higher endeavor on the part of every member of the profession, whether or not in the military medical service, during the remainder of the war.

"The reference to the American medical units made by Sir Donald MacAllister in his presidential address to the General Medical Council calls to mind that it is not this year that members of the medical profession in the United States of America began to play a part in the war so far as the important section of it, conducted by the British Expeditionary Force in France, is concerned. The American Hospital outside the Neuilly gate of Paris, which at one time worked for the British as well as for the French forces, opened its doors within the first few weeks of the war; about the same time also an American motor ambulance team, which included a certain number of American medical men, also began to work, and not very many months had passed before more than one medical man of American extraction and education had successfully volunteered for service in the commissioned ranks of the Royal Army Medical Corps itself. It was also well before the first year of the war was over that a plan was working under which two university centres in the United States undertook to supply the medical staffs of not less than two base hospitals. The teams engaged to serve for not less than six months, a portion of them then returning home and being replaced by new arrivals. They were American units in the sense that the ward medical officers, surgical experts, and officers in charge of divisions, as also the officers in charge of special departments and the nurses, were drawn from the United States, while their administrative officers and the other ranks were supplied by the Royal Army Medical Corps. One of these hospitals is still at work alongside similar base hospitals more purely American in character which got to work this year. Of these there are about half a dozen, and though they bear the numbers of the British General Hospital units which they replace and whose habitations they inherited, they are all complete American units in the sense that each of them was formed in the United States as part of the general arrangements made by the American Red Cross Society in anticipation of the possible extension of the American army. At first there were only two of them, but now they are about fifty in different parts of the United States, all raised to represent different localities or institutions. The first two units, representative of Harvard and the Western Reserve Universities, sailed for Europe within about five days of the time they actually received word from the Balfour Commission that their services would be valuable. These two first units were respectively organized by Professors Harvey Cushing and Crile, both of whom had previously in turn played a part in the affairs of the American hospital at Neuilly. The latter was for long worked on the principle that some distinguished surgeon formed his own team and brought it over ready to take charge of a section of the work for a period of three months; and the existing hospitals, to which reference has been made, seem to be constituted on the same principle but without the time limit. All of them have been formed with the idea that when the moment comes they will step into their places as units of the medical departments of the American army, and each has at its administrative head an officer belonging to the medical corps of the standing army of the United States. The other officers, who take complete charge of the professional work, are medical officers of the Reserve Corps (M.O.R.C.), and do their work under an officer who is always a more or less well known medical man in America, and bears the title of Director. He also holds rank as a major in the American army, the other officers being commonly lieutenants and sometimes captains. In the American army, as in the French, the nominal rank of officers is commonly a grade or two lower than in our own. There are also usually attached to each of these American units in France two officers of the Royal Army Medical Corps, one of whom acts as registrar, and assists the administrative commanding officer in respect of the returns required by the British authorities, and the other as quartermaster. There are at present American registrars and quartermasters also. There are also a few R.A.M.C. of other ranks at some of these units. With these exceptions, the whole of the personnel is drawn from the United States. They work under the orders of the D.D.M.S. of the area in which they happen to be placed (they are distributed over the principal British bases in France) and enjoy the advantage of the assistance of the consulting surgeons and physicians attached to the bases concerned. Most of them seem to fly the Stars and Stripes, but otherwise there is nothing to differentiate them from the other hospital units—British, Australian, New Zealand, Canadian, and South African—serving with the British Expeditionary Force, except in respect of the uniforms of their officers, nurses, and other ranks. Nor do they differ in their internal arrangements as a whole, though they do differ materially in one important factor. They are strongly staffed on paper as compared with British hospitals of the same nominal size, and extremely strongly staffed in practice, since British hospitals in France seldom have more than about two-thirds of their official establishment strength. The United States officers in military hospitals are by no means the only American medical officers now in France. A large number of others not attached to hospitals have arrived in France during the past few months, and have been distributed among the armies at field ambulances, casualty clearing stations, and elsewhere. Whether the base units mentioned as well as the unattached medical officers will be withdrawn when the time comes for the American army to take its place in the line does not appear yet to be settled. Meantime the hospital units in particular are playing an exceedingly useful part, and the American medical officers, as a whole, are gaining an experience which will prove invaluable when the war for the American army really begins. Several of the American base hospitals are understood to have contributed surgical teams to the casualty clearing stations during the recent heavy fighting, and one American medical officer attached to a field ambulance is rumored to have been recommended for the Victoria Cross."

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RED CROSS WORK WITH THE UNITED STATES ARMY.

On February 22, the Bureau of Public Information at Washington issued the following statement defining the activities of the Red Cross in conjunction with the United States Army during the present war:

The statement setting forth the duties of the Red Cross follows, in full:

"1. To distribute sweaters, mufflers, helmets, socks, comfort kits, etc., and to receive the assistance and coöperation of all officers in making the distribution fair, equal and where most needed.

2. To render emergency relief of every kind upon the request or suggestion of an officer in charge. All officers are instructed to avail themselves of this assistance whenever, in their opinion, advisable. Officers should be none the less diligent in attempting to foresee the needs of their department in order that they may be supplied through regular Government channels. All such requests must be approved by the commanding officer, who will cause a record to be kept of all such articles.

3. To relieve the anxiety and to sustain the morale of soldiers who are worried about their families at home and to promote the comfort and well-being of these families, authority is given to the American Red Cross to place one or more representatives of the home service bureau of the department of civilian relief at the service of the men of each division of the army wherever located. The soldiers should be informed through official orders of the presence of such representative or representatives and that the Red Cross is able and willing to serve both soldiers and their families when in need of any helpful service. This representative and his assistants will be accredited to the division commander and will be subject to authority and to military laws and regulations. This representative of the Red Cross will have the status of an officer in the army and will be provided quarters when available. Such assistants and clerks as may be necessary will be provided by the American Red Cross and must be males. These assistants and clerks, if any, will have the status of non-commissioned officers. All reports and correspondence of this officer will be subject to censorship of the commanding officer.

4. To conduct canteen service stations for furnishing refreshments to soldiers when travelling through the country, to furnish emergency relief to the sick and wounded when en route and to see that they are conveyed to a hospital when necessary and requested by the commanding officer. All commanders of troop trains are authorized to avail themselves of it whenever, in their opinion, advisable.

5. A representative of the American Red Cross may be attached to each base hospital to furnish emergency supplies when called upon, to communicate with the families of patients, to render home service to patients and such other assistance as pertains to Red Cross work. The representative of the Red Cross so assigned, with his assistants, will be accredited to the commanding officer of the base hospital and will be subject to the same regulations as to status, privileges, assistants and censorship, as provided in preceding paragraph applying to the representatives of the Red Cross assigned to divisions.

6. In order to render the above outlined service to the best advantage, the accredited chief officer representing the American Red Cross at division headquarters will be a field director.

7. Officials of the Red Cross assigned on duty with the military establishment, as outlined above, will be required to wear the regulation uniform of the American Red Cross, together with the insignia, etc., as approved by the Secretary of War.

8. The commanding officers of all other encampments or organizations to which Red Cross representatives may be assigned in accordance with this order, are authorized to furnish to the American Red Cross anything that they may request, within reason, such as warehouses, offices, light, heat, telephones, etc., in order to enable them to properly carry on the work for which they are assigned."

MEDICAL MATTERS IN PALESTINE.

The *British Medical Journal* has recently published the following extract from a despatch of General Sir Archibald Murray, describing the British campaign in Palestine from March to June, 1917. The despatch gives the story of the two attacks on Gaza (March 26 and April 17):

"On the first occasion the enemy was severely punished, 950 Turkish and German prisoners being taken and casualties, estimated at 8000, inflicted. The British casualties were under 4000. On the second attack the British casualties amounted to some 7000. Both attacks failed to reach Gaza, but a certain amount of ground was won and retained. Sir Archibald Murray says that no praise can be too high for the gallantry and steadfastness of the cavalry, infantry, artillery, Royal Flying Corps, and all other units which took part in the two battles for Gaza. With regard to the medical services he writes as follows:

'The health of the troops has throughout been singularly good. All branches of the medical services under Surgeon-General J. Maher, C.B., deserve the highest commendation for their successful work at the front, on the lines of communication, and in the base hospitals. The presence in the force of a number of civil medical consultants, who have so patriotically given their services, has been of the very greatest value, and they have worked in successful accord with the regular medical services of the army. The Australian Army Medical Corps and the New Zealand Medical Corps have also been remarkable for their efficiency and unremitting devotion.' "

Correspondence.

THE TREATMENT OF PNEUMONIA.

42 West 37th St., New York,
February 25, 1918.

Mr. Editor:—

To my mind, there are a few reasons why, hitherto, the treatment of pneumonia has been unsatisfactory. This is especially true in hospitals and also in instances where one plays the rôle of consultant in private practice.

In hospitals, as a rule, the patient comes in when the disease is already advanced and even good treatment has not a fair chance of success.

This is also true, in a measure, in civil practice, where the consultant physician is usually called when the disease is established.

In hospitals, patients are usually treated in the ward; in private practice among people at all well-to-do the patient has a room to himself and can be managed more effectively.

A patient stricken with pneumonia, or with a preceding bronchial or grippal attack which leads up to it, has the best chance to get well whenever he is isolated in his room from the beginning, whether it be at home or in a hospital, and a certain very simple treatment is mainly insisted upon, apart from what is in addition, eminently intelligent, and applies in all cases. The latter, to which I refer, are proper ventilation of the room, liquid assimilable nourishment, no injudicious interference for purpose of finding out just how far the disease has progressed, and promotion of quiet and peace of mind. Inhalations of compound tincture of benzoin, with a proportion of beechwood creosote, should be started from the beginning of the disease and kept constantly going. A little of the best old brandy, or whiskey and black coffee from time to time and a hypodermic tablet of tincture of strophanthus, each containing one minim, placed under the tongue every two hours, is practically almost everything in the way of medication that is desirable and really useful.

If required, a little "cascara evacuant" for the bowels is the most suitable preparation to employ.

In looking back over a lifetime of caring for pneumonia patients, I have lost very few relatively, when I have been called in at the beginning of the attack and had practically the entire charge of the patient. I do not believe digitalis is of service, nor, indeed, strychnine. I do believe, in some instances, judicious and timely venesection will help save life. Hospital statistics have little weight with me on account of circumstances to which I have very briefly referred.

Experimental work is always problematical for quite a while and, by itself, should *not* be relied upon.

I cannot but hope every general practitioner will take heart from what I have written and firmly believe and simply do as I urge. Then, and then only, will the great and increasing death rate of pneumonia become notably diminished.

Beverley Robinson, M.D.

RECENT DEATHS.

John Macleod Martin, M.D., a graduate of McGill University Faculty of Medicine in 1889, died at his home in Roxbury, February 19, 1918, aged 62 years. He was a Fellow of the Massachusetts Medical Society.

John H. Mullen, M.D., a graduate of Boston College, 1896, and Harvard Medical School, 1900, was recently found dead in his office. He had been suffering from an attack of pleurisy. He was 42 years of age. He is survived by his mother and six sisters.

John B. Callahan, M.D., who is noted for his scientific dental research work, died suddenly of apoplexy, February 20, in Cincinnati, Ohio, at the age of 65.

Howard Burhans Besemer, M.D., of Ithaca, N. Y., died at his home in that city on February 9. He was born in Dreyden, N. Y. on October 19, 1869, and graduated from the University of New York Medical College in 1891. He afterwards received an M.D. degree from the Cleveland Homeopathic Medical College. Dr. Besemer began practice in Ithaca and continued his work up to his death. He was a Fellow of the American College of Surgeons.

Dr. Lyman Curtis Bryan, a graduate of Boston Dental School, now Tufts Dental College, died recently at Lausanne, Switzerland. Dr. Bryan established himself in practice in that city after he had taken two years of postgraduate work in Germany and had remained there ever since. He was born in Kentucky in 1852.

APPOINTMENT.

Dr. Eugene R. Kelley, head of the division of communicable diseases of the State Department of Health, has been appointed successor to Dr. Allan J. McLaughlin, State Health Commissioner, who has been recalled to Washington.

BACK NUMBERS OF JOURNAL WANTED.

We will pay 15 cents per copy for the Boston Medical and Surgical Journal of Nov. 8, 1917. Send them to us at 126 Massachusetts Avenue, Boston, and payment will be made by return mail.

The Boston Medical and Surgical Journal

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UNNECESSARY OPERATIONS.[*]

By George C. Wilkins, M.D., F.A.C.S., Manchester, N. H.

After graduating from the medical school and passing through his hospital service or services, the physician who has not elected to devote his time to laboratory work or administrative duties enters upon the active practice of his chosen profession.

He at once assumes certain obligations which, although implied, are none the less imperative. In his professional life, his contact with his patients is more intimate, more responsible and demands more honesty of purpose than any other professional or commercial relationship between individuals. It is to be regretted that the principles, if not the words, of the Hippocratic oath, have not been dwelt upon in the medical school teachings, with more serious appreciation of their application to present-day conditions.

In no phase of contact between individuals should the principles of the Golden Rule be more rigidly adhered to than in the dealings of a physician with his patient. The average patient consults a physician of ability, or a man to be trusted. Whether the physician is one of the leaders of his profession or a more humble worker in the ranks, there is only one attitude for him to assume in his treatment of the patient. He must not violate the confidence; he must give the best advice that within him lies, and in doing so he will be giving what all men desire with regard to themselves—honest dealing.

We are all human, and to be human means that we all make mistakes. A man may be pardoned for making a mistake, particularly if it is a mistake in judgment, but there is no pardon for the man who deliberately violates the confidence reposed in him, and wilfully subjects his patient to unnecessary and uncalled-for procedures. Sins of omission we may censure; but what can we say of the man who maliciously commits sins of commission in the medical or surgical treatment of his patient.

Please let it be understood that this paper is not intended as an arraignment of physicians and surgeons as a body; far from it, for I believe the large majority of men in our profession hold to the beliefs which I have mentioned, and endeavor, according to their lights, to live up to them, conscientiously and faithfully.

Unfortunately, there are men scattered through the profession who are constantly guided by two factors other than the consideration of the real good of their patients. These two factors are, an abnormal development of the commercial instinct, and an ambition to forge ahead, regardless of the means utilized.

The desire for money, and we may sometimes say, the need for money, is a well-known incentive to wrong-doing, and it is impossible for some men in our profession to resist an opportunity to take what they call "ready money" for rendering some service to a patient who has falsely been led to believe that such service is necessary.

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[*] President's address at the Annual Meeting of the Hillsboro (N. H.) Medical Society, at Manchester, N. H., April 18, 1917.

Ambition is laudable, but ambition should not travel alone. Ambition, to be honestly successful, should be accompanied by a conscience. Ambition to accomplish a large amount of work, ambition to keep a hospital well filled, ambition to acquire the glory of many successes, have all led men in our profession away from the ideals to which they should cling, and when they have pursued this path for a certain length of time, God only can help them and their patients.

The practice of surgery opens up to these men larger fields of opportunity than can be obtained in other branches of medical practice, because the patient usually has no way of verifying the results of his operation. The patient is advised that he needs an operation; he implicitly trusts his surgeon, as all patients should, but at times this trustfulness, as observed by an uninterested onlooker, is quite pitiful to contemplate.

As an example, I will cite an incident occurring several years ago. A physician was called to a young married woman who gave a history of rather excessive flowing two weeks after a normal period. The physician, after examination, advised an intra-abdominal pelvic operation, and the patient was moved to a hospital. The husband then decided to have a consultation, and an older man was summoned. He found the pelvic organs in an absolutely normal condition and advised waiting. Two years later the patient was still in perfect health.

Another woman was advised that she needed an operation for a large cystic tumor of the ovary. She later consulted the surgeon on duty at a hospital in the same town. He found absolutely nothing abnormal in the pelvis.

Too often operations have been advised from the deductions of a snap diagnosis. This is always inexcusable, for if ever a patient deserves an adequate consideration of his case it is when his subsequent treatment contemplates the dangers of a surgical procedure, and we cannot be too often reminded that even minor operations may not be devoid of danger.

The mistakes resulting from a snap diagnosis can be illustrated by two cases, both young women, who consulted the same physician during the vacation absence of their own physicians. The first complained of backache of recent origin. She was examined vaginally at once and informed that she must have an operation on her uterus and tubes. After the return of her physician he examined her and found nothing abnormal with the pelvic organs, but did find her trouble to be due to muscle strain. Strapping her back with adhesive plaster cured the backache.

The other patient complained of a diarrhea of two or three weeks' duration. Without a physical examination, this physician advised an operation on the intestines, the exact nature of which the patient did not understand. When her physician returned, he cured her very shortly with bismuth and liberal doses of bromide.

Something might be said in regard to the inadvisability of too radical operations, when more conservative methods would produce equally good or better results. I have known of enthusiastic young operators removing the uterus in several young women for simple retroversion. This can be considered only an unnecessary procedure and absolutely unscientific.

Then, again, we have the hopeless cases—inoperable cancer and recurrences of cancers that are anatomically inoperable. Is it right or fair to open the abdomen of a woman who had a recurrence of cancer several years after a complete removal of the pelvic organs for cancer of the uterus? It is not justified, unless there is an intestinal obstruction to relieve or some such secondary complication.

One of my own cases had a recurrence about five years after primary operation. Understanding that she was to be operated by another physician, I asked him what he expected to accomplish. He replied that he did not expect to accomplish anything, but that the patient insisted upon an operation, and he might as well have her money as anyone. Two other similar cases have been related to me by other physicians.

Let us now consider that small concealed portion of our anatomy hiding away in various positions alongside the cecum—the appendix—which causes trouble enough in itself without being blamed for every transient non-febrile belly-ache that our many feet of intestines may be called upon to endure. Some surgeons seem to look upon this organ as a legitimate, or rather, illegitimate, means of enabling them to contend against the high cost of living.

Probably most of you, at some time or other, have been called upon to render judgment as to whether a certain patient has appendicitis or not, and if so, to advise whether or not he should be operated upon. There is so much latitude of opinion in these cases that we should not judge another's diagnosis and advice harshly, and never hastily, but when in a given community a number of able practitioners have case after case coming under their observation, where an incorrect diagnosis of appendicitis has been made by the same one, two or three surgeons, and these cases have been followed up for a considerable length of time without developing real symptoms of appendicitis, and are, perhaps, relieved by simple medication, then I do not think I am making too strong a statement when I say there is just cause for doubting the honesty of these men.

While, as I have said, the average patient accepts his surgeon's advice as honest, the cumulative evidence of a multiplicity of mistakes in the diagnosis of appendicitis, intentional or otherwise, has developed a fear in the minds of the laity that they may be hurried unnecessarily to the operating table.

It is perfectly obvious why more unnecessary operations are performed on the appendix than upon any other organ. In the first place, it is concealed before operation, and it may be concealed after operation. The patient is usually satisfied with the explanation that the appendix was considerably inflamed, that it had been taken just in time, or that it was found to be much worse than expected. Secondly, appendectomy in an uncomplicated case is an operation easily performed by anyone with but slight knowledge of surgery.

It is a recognized fact that the public will stand being fooled for a long time, but as a straw showing the direction of the wind, I will call your attention to the legislature of a Western state which has been considering seriously a bill (whether the bill has since passed or not, I do not know), providing that every appendix removed in the state shall be examined at the state laboratory, and if found normal, the patient is to be absolved from remunerating the surgeon. The originators of this bill may have had some experience, for in the penalty prescribed is found the true indication of its effectiveness.

This attitude which has developed in the public mind is entirely due to the activities of surgeons who have felt of the abdomen with the hand, but whose eyes have been focused on the fee.

While I think it is entirely unnecessary to cite to you cases illustrating the foregoing remarks, I will relate a story told me by a physician in the central part of this State, as it touches upon another phase of unnecessary operations, namely, surgical procedures requiring ether upon patients affected with active tubercular processes in the lungs. This should be done only after very careful consideration of the case, and with assurance that the patient will be benefited by such procedures.

A patient of this physician had an active tubercular process in both lungs, and with it a certain amount of stomach disturbance which the physician attributed to the tubercular condition. One day the patient took matters in his own hands and consulted a surgeon, who at once informed him that his appendix was the cause of his stomach trouble and should be removed. Not entirely satisfied with this, the patient journeyed on to Boston and entered a large hospital for diagnosis and treatment. At this institution he was told there were no indications of appendicitis, and was sent back to the country.

Not infrequently we are asked, "Doctor, would you advise this operation if it were a member of your own family?" and while I do not feel that it would be at all practical to apply this test to all operations, I believe a certain amount of mental consideration along this line in the mind of the surgeon in all doubtful cases, if honestly weighed in the balance of judgment, would tend to eliminate many operations, where the real indication has been the fee or the mere desire to operate, and not the ultimate good of the patient.

ARTIFICIAL PNEUMOTHORAX AND PULMONARY TUBERCULOSIS.*

By Cleaveland Floyd, M.D., Boston,

Visiting Physician at the Boston City Hospital, and Chief of the Clinic at Boston Consumptives' Hospital, Out-patient Dept.

Since Koch produced tuberculin and with it raised the hopes of the profession that a cure for tuberculosis had been found, no therapeutic measure has aroused so much interest as artificial pneumothorax.

As was true of tuberculin, so is it equally true of pulmonary compression by nitrogen, that there is a great diversity of opinion in regard to its efficacy; and even after ten years of its gradually increasing use, its exact limitations and place in the treatment of tuberculosis are not yet entirely determined. One thing, however, has been established and that is, that no patient should be denied its possible effects where other measures have failed. The procedure of its production has undergone little modification since the early work of Forlanini, and only minor modifications in technic, tending to simplify the procedure, have been adopted by most operators. The initial incision in the chest wall, as advocated by Spengler, has been entirely replaced by the much simpler procedure of thoracentesis. Injecting nitrogen into the chest, however, is quite different from syphoning fluid out, and unless the procedure is fully safeguarded by manometric readings, it becomes one of some danger. Where, however, it has been determined that the needlepoint lies in the pleural cavity, no difficulty is generally experienced in producing a limited pneumothorax. Subsequent injection of the gas in close proximity to the first region compressed, if the lung is collapsible, usually causes no difficulty, and with amounts of nitrogen varying from the initial 300 cc., increased up to 700 or 1000 cc., depending upon the amount of pressure considered desirable in the chest, will generally carry on the collapse of the lung to partial or complete obliteration of its air spaces.

The successful treatment of phthisis demands that there should be a steady, continued positive pressure in the chest as indicated by the manometer, and this should be the object of the operator after the inception of the treatment.

In most instances, the lower part of the lung lends itself more readily to compression, both on account of the anatomical arrangement of the chest, and because of the freer movement and the less frequent involvement of the lower lobes of the lung. Where the process is in the upper half of the lung, and nitrogen is inoculated into

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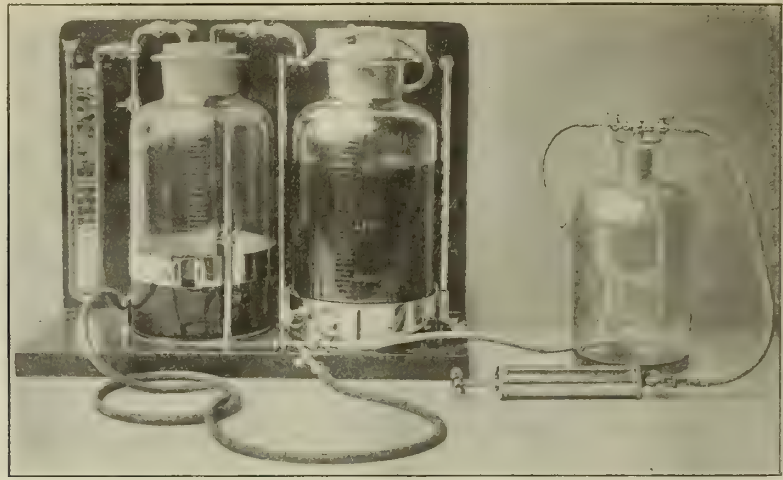
* Presented before the Framingham Medical Club and Community Health Station, Oct. 18, 1917.



Pneumothorax Apparatus Connected for Aspiration and Inflation.

the chest over the lower lobe, it is often surprising to see how rapidly transmitted pressure will effect the activity of a process at some distance from the direct point of application.

Among the workers in this field there seems to be an almost unanimous opinion that this therapeutic measure in all cases where it can be made applicable to any extent, is a beneficial measure, and the diminution of active signs and symptoms is often most gratifying, even where at times only temporary.

This has led many men to use the artificial pneumothorax as a palliative measure for the comfort of patients, even where no permanent effects are to be expected, and on this account in the tabulation of results obtained, the headings of permanent and palliative very commonly appear. It certainly can be said without fear of contradiction, that if this measure were of no other benefit than a palliative one, for the distressing symptoms of a hopeless case, its use is justified.

The difficulties and complications of the method are fairly well known. A few cases of pleural shock have been reported in the literature, but these have been far less numerous than would be expected where the method has been used by so many physicians. I have personally seen one such case. It would seem that in most cases this catastrophe might be avoided by the thorough cocainizing of the pleura and use of morphine, before nitrogen is put into the chest. The most common complication is the occurrence of a pleural exudate, either as an effusion or as pus. Between 40 and 50% of the cases sooner or later show effusions, which occasionally may become purulent. The effusion itself can readily be removed, and replaced with nitrogen, but an empyema is a much more serious complication. This latter condition is generally due to the entering of the effusion by micro-organisms from an extensively involved lung, or by the puncturing of the lung and subsequent infection of the effusion by the operator's needle.

Among the rarer complications are gas-embolism and accidental pneumothorax. The former has been observed by few clinicians, and while the latter is not rare, few cases have been reported. Beggs cites two such cases in his practice. Two real difficulties stand out in the use of this method, first, the occurrence of adhesions with more or less obliteration of the pleural cavity, and second, the difficulty of determining how long to continue treatment after all symptoms and active signs have subsided.

The increasing importance of the x-ray in this work is rapidly becoming recognized. Its chief value lies in determining the extent of the pneumothorax produced, the position of the collapsed lung, and whether or not a small effusion is present. Its failure to determine the presence of fine adhesions or areas of obliteration of the pleural cavity is a serious one, as this is the greatest handicap with which the operator has to contend. Stereoscopic plates, however, give promise of better results along this line.

In regard to the selection of cases for treatment, the original idea of Spengler still holds that the unilateral, non-adherent, tubercular lung is the ideal for this treatment. The majority of men, however, have used this method chiefly in the advanced case, and often as a last resort. Such cases occasionally show marked improvement, and as a palliative measure the treatment is justified. In most cases, however, cure is not to be expected, and it is here that all the difficulties and complications of the method are likely to arise. There is a growing feeling among phthisiologists that the method is applicable earlier in the disease than has hitherto been thought desirable, and if cure is to be hoped for through the use of artificial pneumothorax, it should not be limited to the advanced case.

In any case, no matter how early in the disease, where two or three months of good sanatorium treatment has failed to retard the advance of a tubercular process, this therapeutic measure should be invoked.

One of the greatest sources of failure to obtain better results lies in the fact that too often the collapsed lung is allowed to re-expand in too short a period of time.

In many cases where an arrest of the disease has been secured by this method, disaster has finally resulted, because of the failure to continue the compression of the lung for a sufficient period of time, even after all symptoms have subsided. In my opinion, re-expansion of a compressed lung should be allowed to take place very slowly, and only after all activity of the tubercular process has ceased, for a period of at least six or eight months.

As has been well said, statistics are of little value, because of the great individual variation shown by pulmonary tuberculosis. One thing, however, may be gathered from such figures as are at hand, namely, that one-third to one-half of the cases sufficiently treated have been classed in the group of "markedly improved or apparently arrested." Case for case, where the untreated, well marked consumptive is contrasted with similar cases that have undergone artificial pneumothorax, the results overwhelmingly prove this measure to be one of great value. The frequently quoted statistics published by Sachs, of the results obtained by American observers, show that about 50% were either improved or the disease arrested.

The results of Wolman and Hirshman show that the late results in a series of 141 cases gave about one-fourth as permanently benefited. The figures of Shortle show about 50% of his cases to have done well. Such results are general among many American observers and merely go to prove that in competent hands this therapeutic measure has an established place in the treatment of pulmonary tuberculosis.

If it is used only in the ideal case the results would be brilliant, but even where it has been applied as is generally the case among the most unfavorable and even hopeless cases of advanced phthisis, it has proved of more value than any other measure that we have at hand.

With increased experience and the restriction of this measure to sanitarium patients, as is gradually becoming the practice in this country, the results obtained will steadily improve, and no man who has the best interest of his patients at heart can afford to neglect artificial pneumothorax where other measures have failed.

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Original Articles.

TRANSFUSION. EXPERIENCES IN OVER TWO HUNDRED CASES.[*]

By A. R. Kimpton,[†] M.D., F.A.C.S., Boston.

I have several times heard most excellent men say that they had never seen a patient who really needed transfusion. I have seen over 200 cases that did need it, for I have done that number of transfusions. Likewise, I have seen a patient die who I thought did not need transfusion, and die for want of it, although the death was sudden. All of these cases have arisen in the course of a general surgical practice, and many others have been seen as to the advisability of doing transfusion, that were deemed inadvisable.

No longer is transfusion a procedure of last resort, nor is it one of uncertain technical success. It is distinctly a definite surgical procedure, certain as to its performance, and definite as to its indications.

No matter what one's pet method of transfusion may be, he should remember that it is to Crile that the credit belongs for putting the technic on a surgical basis, and it is to J. C. Hubbard that I owe my interest in the subject, as assistant to him in the use of Crile's technic.

So transfusion now is a very definite surgical procedure, and has a very definite place in the treatment of certain medical and surgical conditions, as well as in the treatment of certain emergencies. Technical difficulties may be said to have been entirely overcome. Following the drive on new methods came the knowledge that there were other difficulties, such as agglutination, hemolysis, so-called anaphylaxis, and acute dilation of the heart. These, too, are now largely overcome by careful preliminary tests and care during the transfer of blood to the patient to avoid acute dilation of the heart. Nevertheless, the only death I have had directly due to incompatible bloods was from anaphylaxis, after most careful iso-agglutination tests had been done by a trained laboratory man. I will later speak further of blood tests.

Recently I have had a second death from the same cause, after careful tests had been made.

If one were to ask, "When is transfusion of value?" the answer might, roughly, be this:

In acute secondary anemia (acute hemorrhage), yes.

In chronic secondary anemia, yes.

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[*] Read before the Massachusetts Homeopathic Medical Society, Lawrence Medical Society, and Essex South Medical Society.

[†] Previous Publications on Transfusions:
Kimpton, A. R., and Brown, J. Howard: A New and Simple Method of Transfusion, Jour. A. M. A., July 12, 1913, p. 117.
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In acute primary anemia, such as acute leukemia, no.

In chronic primary anemia, such as pernicious, yes.

It is in the massive, acute hemorrhage that transfusion is of the greatest value, and it is in these cases that one gets the most pleasing results,—often almost miraculous. It is at least most dramatic to see a patient the picture of death,—cold, pulseless and unconscious,—return to consciousness with a good pulse and color, by means of a prompt transfusion. Not all cases get as far as that, but I have seen just that a good many times.

For massive, acute hemorrhage I have done some fifty transfusions, not including hemorrhage of the new-born, or hemophilia. Of these there have been 17 deaths, and several of the deaths were because of complications existing besides hemorrhage, such as malignancy, sepsis, nephritis, etc. When one considers all these cases were seen in consultation because of great hemorrhage, the results are especially gratifying. The hemorrhages were from very varied sources, such as post-operative hemorrhages, rupture of ectopic pregnancies and spleens, uterine fibroids, post-partum hemorrhage, hemorrhages from that most dangerous operation—tonsillectomy—and hemorrhages from stomach, etc. In fact, hemorrhages from almost every organ in the body have been seen and the patients transfused. Great care must be taken in these massive hemorrhages not to give too much blood, unless assured that the bleeding vessel is secured when the vessels may be filled; otherwise Nature's means—lowering of blood-pressure—of stopping the bleeding will be defeated.

The average amount of blood transfused in the acute hemorrhages is 800 to 1000 cc., although more is at times given, but rarely is more than 1000 cc. necessary. If the bleeding is not secured, as a rule not over 500 cc. is given.

I have transfused and immediately operated upon fourteen cases in this group of acute hemorrhages. All were critically ill and, with two exceptions, all recovered. Several others were operated upon by other surgeons either while I was doing the transfusion, or immediately afterwards. These cases were mostly hemorrhage from the stomach, ruptured spleens, ruptured ectopic pregnancies, ruptured arterio-venous aneurysm, uterine polyp, or fibroid, and gunshot wound of the abdomen. The results obtained in each case would be well worth while enumerating, but too much time would be taken. Suffice it to say that there is nothing more pleasing to the surgeon than the successful outcome in such critical cases. The bleeding from all except the stomach hemorrhages is of definite origin, but it should be emphasized that not all massive hemorrhages from the stomach are by any means intra-gastric or intra-duodenal in their origin. Without question, many of the cases labeled hemorrhage from ulcer of the stomach or duodenum are splenic in origin, and splenectomy saves such cases—to say nothing of those from rupture of an esophageal varix.

Seldom will a patient die following a single gastric hemorrhage, but it is such repeated hemorrhages that are to be feared. These cases transfused and immediately operated upon have a decidedly better chance of life than when treated medically. The medical men might ask: "What assurance have you that you will find the bleeding point?" I can only answer that I have a much greater chance of finding the bleeding point than has the medical man. Furthermore, I believe that the hemorrhage in many of the cases operated upon and no evidence of ulcer found, but a somewhat enlarged spleen found, to be of splenic origin. At the same time there are small gastric ulcers involving only the mucosa and giving no serous surface evidence of ulcer that do cause massive hemorrhage. Usually the hemorrhage, if of intra-gastric origin, is accompanied by a gastric history. Illustration: A woman sixty-five years old, with a gastric and duodenal history covering fifteen years, with several hemorrhages, was seen in consultation because of massive gastric hemorrhage. Patient pulseless, with almost no capillary reaction, was transfused with 500 cc. of blood. Warning of repeated hemorrhage was given, and further surgery advised but refused. The patient's response to transfusion was most satisfactory, but five days later the hemorrhage was repeated. This time the patient was apparently moribund when seen. A second transfusion was rapidly done, giving 800 cc. of blood, and this immediately followed by a laparotomy consisting of a posterior gastroenterostomy, and the turning in of an ulcer just beyond the pylorus. This patient is entirely well, sixteen months later.

I could mention a good many similar cases, but this will suffice to illustrate the point. A good many times I have transfused and immediately operated upon patients suffering from ruptured extrauterine pregnancy with recovery in each case. These have all been cases in a most critical condition. To be sure, the hemorrhage of most extrauterines has stopped when operated upon, but they can be brought to a normal condition much more quickly and operated upon much more safely with transfusion than without.

Under certain conditions the blood free in the abdominal cavity can be filtered and used to transfuse the patient. This is likewise true of blood in other cavities of the body. I have had no occasion to take advantage of this procedure, as donors have always been available. Nevertheless, it should always be remembered as a useful procedure.

One might ask: "How do you decide whether or not a patient needs transfusion?" I depend largely upon my experience with such cases,—their appearance, pulse, and capillary reaction, together with their hemoglobin and diastolic blood-pressure. Any patient with a diastolic blood-pressure getting down to fifty or less because of hemorrhage is in a dangerous condition. The amount of blood lost and the time consumed in losing it is of marked importance, for a sudden hemorrhage is much more serious than a slow hemorrhage of greater amount. It is not always easy to decide, but, provided sufficient blood tests have been made, it is safer to transfuse border-line cases. They will recover much more quickly, will be more resistant to infection, and less liable to further hemorrhage. This was brought home to me forcibly by having just such a patient die without transfusion, and I believe this was an error of judgment on my part. This patient had had severe hemorrhage from a complete placenta previa, had been delivered, and was seen in consultation as to the advisability of transfusion. She was improving rapidly, and although much blood had been lost, I advised against transfusion, when she suddenly became worse and promptly died. She might have died anyway, but I believe a transfusion, judicious in amount, might have saved her life. Only the preceding week I had seen an almost identical case following difficult delivery, and advised against transfusion, with prompt recovery. I have seen a considerable number of such cases and advised against transfusion, with recovery of all patients except the one mentioned.

Nevertheless, large hemorrhages due to placenta previa are always, in my opinion, safer with transfusion than without, especially when a considerable amount of blood has been lost suddenly.

A patient suffering from acute hemorrhage,—cold, rapid, thready pulse, or pulseless, white, sometimes cyanotic,—successfully transfused, improves markedly in color, with return of pulse or decrease in its rate, with increased red cells and hemoglobin, with sense of warmth and often hunger,—in other words, either a return to the normal, or an approach to it. I have seen several patients cyanotic, noticeably in the forearm, before they became pallid, and have remarked that the patient is bleeding rapidly. This probably is due to increased heart beat and delay of venous return, and is more often seen in the larger rapid hemorrhages. Much more I could say concerning transfusion in the treatment of acute hemorrhage, as it is its greatest field of usefulness; but enough of acute hemorrhage.

SECONDARY ANEMIA.

Here again one finds a most suitable field for transfusion, and in this group there have been 15 transfusions in 12 patients, with three deaths. Of the deaths, one was secondary anemia arising from actinomycosis. Another death was due to a later operation for gallstones. The patient was apparently dying before transfusion, was deeply jaundiced, and much improved by the transfusion so that operation could be attempted. A few days later she was operated upon and stones were found not only in the gall-bladder and ducts, but many in the liver itself. It seems hardly fair to include this as a death on my list of transfusions; nevertheless, I include it. The third death was the result of intestinal obstruction following an operation for a pelvic abscess of long duration. So one sees that transfusion itself really has no mortality in secondary anemia, and does put patients in a condition to receive surgical benefit, when without transfusion it would have been, to say the least, very dangerous, if not fatal, to have attempted surgical interference.

Not uncommonly one sees a patient who has been bled out by constant or frequent small hemorrhages from one source or another, such as from ulcers, uterine polyps, and so forth. These cases are readily put into shape for operation by transfusion, and transfusion is usually best performed before the operation, although the milder cases may be operated upon first and a transfusion done immediately afterwards, if necessary.

The cases of secondary anemia coming about from Banti's symptom-complex are often most successfully transfused, either before or after splenectomy. When removing large spleens, one should take care to tie the splenic artery first rather than tying the pedicle as a whole; otherwise a large spleen may be removed full of blood, and an acute hemorrhage, to all intents, caused. In reality there is no mortality in secondary anemia because of transfusion, and, as stated above, there should be no mortality from transfusion in itself at any time; this with a very rare exception.

HEMORRHAGE OF THE NEW-BORN.

These cases are, of course, acute hemorrhage, but have been grouped as entirely by themselves. There is no condition where transfusion gives better results. It is specific in its action and nearly every case will recover provided one has not delayed too long and that the hemorrhage is not due to congenital defect of the bile passages. Even the majority of the cases seen very late will recover with transfusion.

As to what cases of hemorrhage in the new-born should be transfused, it has been my experience that any baby having had a hemorrhage, large enough to show it clinically, is safer transfused than not, for such an infant is very liable to have further hemorrhage which may suddenly prove fatal. Furthermore, any infant having had two or more small hemorrhages, whether or not they show it clinically, are safer transfused, for one never knows when such an infant may have a fatal hemorrhage. It takes but a small amount of blood to transfuse a new-born baby,—from 60 to 120 cc.

The method of transfusion in new-born babies is now not difficult because of the use of the infant's longitudinal sinus, as brought out by

Helmholz. This technic I will describe later. I have several times met with hemorrhage of the new-born in which the longitudinal sinus could not be used because of great hemorrhage into the scalp, but even so, *it may be used by feeling one's way into the sinus with a longer needle.* Under these circumstances the external or internal jugular vein is by far the most suitable. I have records of 28 such cases consisting of 30 transfusions. In 12 the longitudinal sinus was used. Six of these babies died: the others, many of which were seemingly moribund, are still alive. Those which died were cases seen very late, with the exception of two, one of which showed congenital malformation of the bile ducts at autopsy. This baby had most profuse hemorrhage, which immediately stopped following transfusion. Ten days later the child began to bleed, and transfusion again stopped the hemorrhage; another ten days and the same thing happened, and this time death followed. Another death came suddenly twenty-four hours after a most dramatic immediate recovery from hemorrhage. No autopsy was done.

I have never seen a reaction of any kind following transfusion in new-born babies, probably due to the fact that the blood of infants does not, as a rule, become grouped until the end of the second year. With only two exceptions, I have used the father as donor. In these two exceptions the mother was used. My clinical experience makes me feel that it is safe to use the mother, and probably the father, as donor. Other men's experience may have been different. The offspring of sensitive mothers are also sensitive for a short time; therefore, one should not get a reaction from injecting a baby with the blood of its mother.

To be sure, there are other methods of treatment, such as serum therapy, that are efficient in many cases. At the same time, to my mind, there is nothing so satisfactory as transfusion for severe cases. Nearly all of the serious cases had had serum in some form.

HEMOPHILIA.

Transfusion cures the attack, but does not cure the disease, and in severe cases will often prove life-saving. No one can say as to the length of time the patient will be free from hemorrhage.

The donor of the patient should not be a relative. Nevertheless, the mother's blood is not necessarily counter-indicated, for although hemophilia is transmitted by the mother to the son, this hereditary character may be transmitted in the germ cell rather than by the maternal blood; hence, the transfusion of a hemophiliac with mother's blood is not counter-indicated, provided agglutination tests are carried out. I have had one satisfactory experience in using the mother as a donor.

SHOCK.

On the grounds that shock is really hemorrhage into the abdominal veins, transfusion, theoretically, should be an ideal treatment, and many men state that it is such. Yet, in my own hands, it has been disappointing, and I think it is only fair to state that there is no reason why the blood transfused should not further distend the already distended abdominal vessels, as there is no reason to expect this blood to have any effect upon the cause of the condition we call shock. If the cause of shock is fat embolus, as claimed by some, then certainly transfusion can be of little value. However, cases of so-called uncomplicated shock, with a diastolic blood-pressure down to fifty or less, may be greatly benefited by prompt transfusion. When taking the diastolic pressure in these cases, one should look for aortic regurgitation, as such cases may have little or no diastolic pressure to start with. Of course one sees cases with predominating shock brought about by hemorrhage not necessarily large, but usually sudden. Here the situation is entirely different and transfusion is of great value, for it replaces the blood lost, thereby removing the initial cause of the shock. Much more might be said on this subject of shock. One case will illustrate:

A brakeman, run over by a freight train, with loss of both legs above the knees. The amount of blood not large but suddenly lost; patient seemed to be suffering from extreme shock brought about by the sudden loss of a comparatively small amount of blood. Patient was *in extremis,* but responded at once to a prompt transfusion, and made an uneventful recovery.

SEPSIS.

Concerning transfusion in the treatment of acute sepsis, and in this I include the acute purpuras, I will frankly state that I see no place for it, as the blood transfused promptly becomes septic itself, and all of my cases done for acute sepsis have died. But those cases of prolonged sepsis, with a resulting secondary anemia, may be much benefited by transfusion, thus raising their resistance. Whole blood in itself is somewhat bactericidal as well as hemostatic. In such cases there is a large field for the immunization of the donor to the infecting organism and repeated small transfusions from this donor.

GAS-POISONING.

In this group I have had but one patient upon whom two transfusions were done, but without success. Here transfusion should be of great benefit, for the condition is analogous to an acute hemorrhage, in that carbon monoxide combines very readily with the red cells,—much more so than does oxygen. Therefore, the oxygen carriers of the blood are as effectually removed from the circulation as by hemorrhage. By transfusion you supply normal red cells and so benefit the patient. These cases should be bled at the time of the transfusion; their blood clots easily, and bleeding may be difficult, but if the patient is used as though a donor, the tube may be filled, removing as much blood as desired without difficulty, and then transfused into the same vein. Transfusion for these cases is seldom taken advantage of, and yet it is the proper procedure in severe cases, and should be done promptly. It is hard to impress medical men of this fact, and the cases continue to die on the medical side of the hospital without even trying transfusion, usually because no donor is available.

TYPHOID FEVER.

Occasionally transfusion is of value in hemorrhage arising from this disease when the patients are not too septic, and it is of value occasionally in eclampsia.

PRIMARY ANEMIAS.

First, the more acute primary anemias, such as acute lymphatic leukemia. Here transfusion is of no value, except possibly to prolong life a variable length of time, a matter of a few hours to a few weeks, as a rule. I have transfused one case of this type nine times at ten to fourteen day intervals, literally keeping the patient alive for four months. Nevertheless, except in rare instances, it almost seems unjustifiable to transfuse these cases. Needless to say, it should never be done without a most careful explanation of the situation to those concerned.

Second, concerning the use of transfusion for the more chronic primary anemias,—pernicious anemia. We know that transfusion, like all other treatment, is of no permanent value; but repeated transfusions in this condition will, without question, prolong the patient's life. We see remissions in pernicious anemia, both without treatment and with medical treatment, but this improvement is usually gradual. A remission brought about by transfusion usually takes place by crisis, whereas a medical remission comes about by lysis.

I might sum the situation up in this manner, —that in *my opinion* transfusion alone offers as much for pernicious anemia as splenectomy with or without transfusion, and does not carry with it any of the dangers that splenectomy carries. I am further of the opinion that splenectomized cases later requiring transfusion do not respond to the transfusion as do cases not splenectomized. I am in accord with the fact that this does not agree with the opinions of other observers. Nevertheless, this has been my observation, and it now seems *to me* that end results of splenectomy hardly warrant the operation. To be sure, the procedure has only been on trial. Personally, I think that my results with transfusion alone for this condition are as good as those with splenectomy, and that the remissions have lasted as long, or longer, and, what is more important, there has been no immediate death, and, with rare exception, very marked improvement, but always variable as to the time this improvement has lasted, the time being from a few days to nearly two years.

I am fully aware that I have said nothing concerning the treatment of pernicious anemia that has not been duplicated by medical treatment. Nevertheless, such results are found only in a few scattered cases. I have observed several times following repeated transfusions for primary anemias that finally a severe reaction of one sort or another has taken place, both when the same donor has been used, and when a different donor has been used. These patients have then died within a few days. I have never seen this occur until four or more transfusions had been done. Similar phenomena have also been observed at times when not preceded by transfusions, as an end result of the disease. I cannot give it any explanation; but this should be remembered in doing repeated transfusions for pernicious anemia. I can only repeat that transfusion offers more for pernicious anemia, although this is little, than any other form of treatment, and that it usually brings about a remission by crisis, whereas medical treatment or no treatment brings about a remission by lysis. Frequently there is a red cell storm, the red cells going to eight million or more. The benefits of transfusion for pernicious anemia are not to be judged by red cells and hemoglobin, but by what the patient can do following the transfusion. Care should be taken in the amount of blood given for pernicious anemia, for too much blood may cause plethora and an aplastic state, rather than stimulate red cell production.

"Has transfusion any dangers?" Its dangers are, first, acute dilation of the heart, which can always be avoided by care in the carrying out of the operation. Its other dangers are those of serum reaction and so-called anaphylaxis. These can usually be avoided by careful preliminary blood grouping or iso-agglutination tests. Skin reactions will help in avoiding anaphylaxis.

"As to the donor, who shall it be?" It is not at all necessary that it be a relative, but it should be a healthy, robust person, free not only of a postive Wassermann, but also free of clinical signs of syphilis. Likewise one of compatible blood, as determined by careful preliminary tests, which should always be done, except where time precludes these tests. Even in the most urgent emergencies, agglutination tests may be done within 20 - 30 minutes.

METHODS OF TRANSFUSIONS.

As to methods of transfusions, there are many, and it was soon after the publication of the method to be described that many other methods were published, some of them closely resembling this method, but leaving out essential features. No one of these methods has been an improvement, in my opinion, upon this method

It meets the requirements of any case and under any circumstances. Any method that is so flexible as to allow transfusion in an attic room without an assistant, or to be done with the operator, recipient and donor all on the same bed, or under circumstances requiring donor and recipient to be in different rooms, leaves little to be desired.

Nevertheless, one can best do transfusions by making himself familiar with whatever method best suits his purposes, and this means making himself familiar *with details,* and not the evident things of the technic.

As to the *citrate method,* I will only state that originally Mr. Brown and myself discussed the use of the citrate method as it has been used in laboratories for years, but saw no reason for using it with this method. It seems to me that for certain cases, citrate transfusion defeats its own purposes, and so far as I have observed and can learn from reading, reactions of more or less severity, such as chills, are decidedly more common following citrate transfusion than following whole undiluted blood transfusion. Furthermore, massive transfusion of citrated blood may be dangerous, for whereas the percentage may be low, the total quantity of citrate in massive transfusions may be considerable. In only three cases where iso-agglutination tests had been done were there any reactions of note. In fact, even the slightest reaction has been rare, and I believe the method used is in some part responsible. I do not mean to say that slight reactions never follow. Blood may be injured as well as soft tissues; blood is simply more liquid. I am under the impression that drawing blood through needles of comparatively small bore and then forcing it through needles into the patient must to some extent injure the blood, and thus be more liable to cause reactions, although these may be slight. Without doubt, citrate methods have their place, and it is for the individual man to choose those suitable for his purpose, as previously stated.

PARAFFINING THE TUBES.

This really amounts to filling partially the warm tube with sterile paraffin, allowing a little to run out the cannula end, and running the remainder back into the receptacle, through the side tube. In detail, the tube is wrapped in a towel and sheet wadding, sterilized in an autoclave, and the paraffin mixture is sterilized either by boiling in a water bath or in an autoclave. (Vincent's mixture, stearin, paraffin and vaseline, in the proportion of 1-2-2, or 54-degree paraffin may be used as well.) Personally, I always keep my tubes paraffined, ready for use, and they are paraffined by a nurse. Having scrubbed up, some one lays open a sterile package containing the tube, the paraffin is kept melted in a water bath, and the tube is moderately heated over one or two alcohol flames. (Not too hot; I find that a Bunsen burner is too hot.) Then remove the cork and nearly fill the tube with the melted mixture,—the more the easier to do. Allow this melted mixture to run around inside the tube and over the surface of the cork, and a little to run out of the cannula end. Then turn it upside down in such a way as to allow all the paraffin to run back into the tube and out the side bar into the paraffin jar. If there is difficulty in the cork not fitting securely, remove the cork and cover with a piece of gauze, trimming away the outside edges of the gauze. With a teaspoon or medicine dropper seal the junction of the cork and glass on the outside with paraffin. It is much better and easier to let the paraffin run back out of the cannula into the tube than to draw out the last drop from the cannula with a piece of gauze, as first described. Take an alcohol sponge and rub over the tube so that it may cool more quickly.

The tube is now replaced in the sterile package and pinned up, ready for use. I always clean my own tubes, and there is no necessity for breaking them. However, should a cannula happen to be broken, it can be repaired.

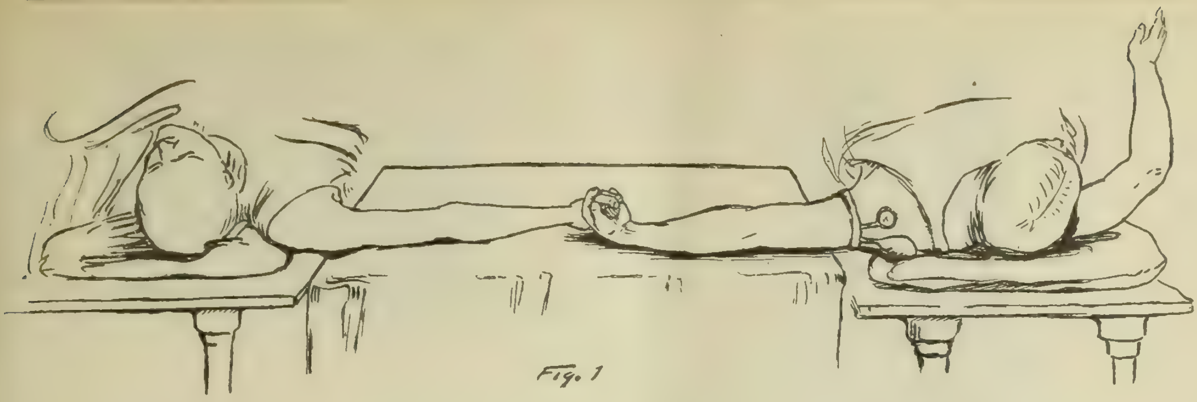
CLEANSING THE TUBES.

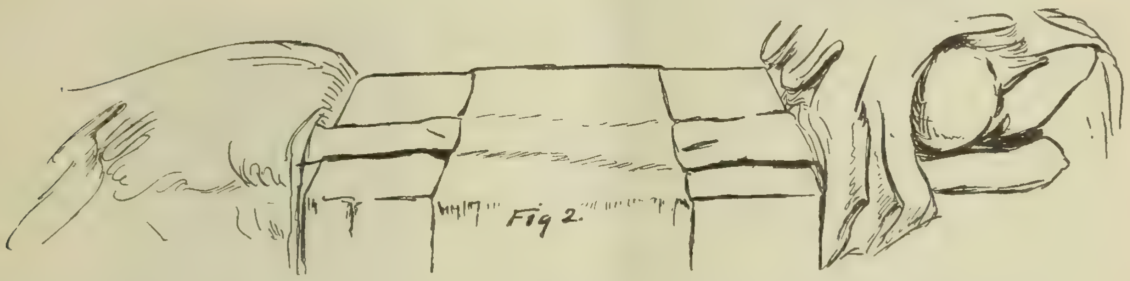
If you have very hot running water, the tube can be cleansed with the greatest ease. If you allow the blood to stand in the tubes, or if the tubes are left in water, cleaning will be difficult. When through with the transfusion, have steaming hot water from the tap run through the tubes. I do this before removing my gloves. First, allow the water to run through the cannula end, so that the paraffin melts and carries the blood back with it into the tube. The cork being removed, the water is allowed to run out. The rest of the paraffin is cleaned out in the same manner. Then, pouring in some tincture of green soap with hot water, shaking the tube and afterward rinsing until the tube is clean, is all that is necessary. The tube is then pinned up, ready to be re-sterilized.

Having the tube sealed with glass at the large end is a distinct disadvantage. This was naturally one of the first things discussed by the originators, and was cast aside as complicating the cleaning and paraffining of the tube. After a very extensive experience, I find no reason for changing the tube as originally designed.

A most satisfactory way of bleeding patients is with this tube, using the patient as a donor, allowing the tube to fill, emptying through the cork end by depressing the tube without removing the cannula from the vein. This process is repeated until as much blood as desired is removed. It is not at all necessary to cut down on the vein for this, but a needle may be attached to the cannula.

Although it is not necessary for patient and donor to be close together, and in many cases they should be separated because of infection, and so forth, it is a distinct advantage to have a precise arrangement under most circumstances.





The most convenient method of arranging and draping the patient is shown in Figs. 1 and 2. If using the donor's left arm and the patient's right arm, the operator should stand on the side of the table towards their heads. If using the opposite arms, he should stand on the opposite side of the table. In this way the operator will not work left-handed in the handling of the tube. To be sure, one may use the same arms, or any arrangement desired, but the arrangement described is decidedly the most efficient. The arms are cleaned with soap, water and alcohol, rather than with iodine, which obscures the veins. A tycos blood-pressure band is placed high and *upside down* on the donor's arm, as shown in Fig. 1. The diastolic pressure of the donor has previously been determined. When filling the tube, the blood-pressure is kept a little below the diastolic pressure. For illustration: If the diastolic pressure is 70, the blood-pressure is kept at 60 to 65. The air is let out of the band when not filling the tube. This gives absolute and scientific venous congestion. A rubber tube may be used as a tourniquet, but it is frequently put on too tightly, and if used, should be applied just tight enough to give venous congestion and not arterial obstruction. (This use of the tycos band has previously been published. There is no method so efficient of obtaining Bier passive congestion, the showing up of varicose veins and other things, as this manner of using the tycos band.)

Briefly, the method consists of inserting the cannula of the tube into a vein, allowing it to fill, removing and inserting the cannula into the recipient's vein, and emptying the tube by air pressure. This may be done either by open exposure of veins or by needle attachment. In minute detail, the technic is as follows: The skin over the veins just below the elbow in the arm of the donor and recipient is injected with novocaine. The veins are exposed cleanly through incisions not over one and one-half inches long. Longitudinal incisions, if the veins are easily visible, if not, a transverse incision, will more readily expose the vein. For this I use merely a knife and small blunt-pointed scissors, passing the points of the scissors along each side of the vein, then under the vein, and spreading. A ligature is placed within the blades, pulled through and cut, exactly as for intravenous salt-solution. The diastolic blood-pressure as described is now established. The donor's vein is now tied off proximally, and the distal ligature is left to be used as a clamp by merely raising it a little after the vein is opened. If there is no assistant present, the weight of a hemostat hanging from the ligature will control the vein.

The donor's vein is now transfixed by a cataract knife and a slit made (Fig. 3). The cannula of the tube is inserted into the vein of the donor for about one-half inch to one inch and held upright until filled by venous pressure (Fig. 4). This usually takes not over two

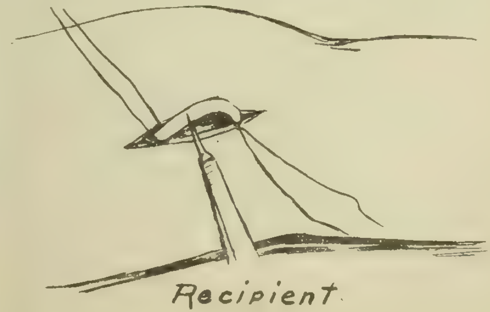


Fig. 3.

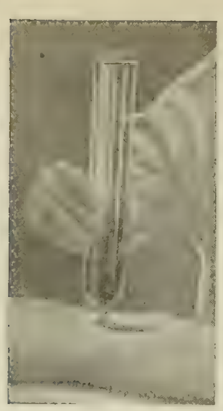


Fig. 4.

minutes for a 250 cc. tube. If not filling well, it probably means that the end of the cannula is against a valve or the side of the vein. The donor is instructed to shut and open his hand tightly and slowly. This, perhaps, hastens the inflow.

While the tube is filling, the vein of the recipient (without the aid of any tourniquet) is tied off distally, the proximal ligature being used as a clamp, and the vein opened. By this time the tube is full, and, the air-pressure having been released, is withdrawn and held on its side with the side-tube uppermost, to prevent the blood from running out. (Thumb over end of side-tube, finger over cork, Fig. 5). The cannula is now inserted into the vein of the recipient and held in an upright position. (Thumb under side-bar at junction with cylinder, finger over cork, Figs. 6 and 7). Be sure the vein of the recipient is bleeding before inserting the cannula. The little angular forceps I have had made are a great aid in introducing the cannula into the vein, especially when the lumen is small. (Figs. 6 and 8.) An actual cautery-bulb is attached to the side-bar, and by a little pressure the tube is emptied. (Fig. 7).

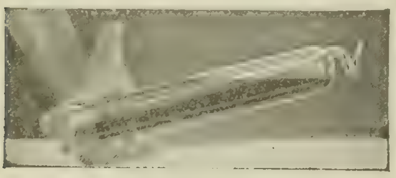


Fig. 5.

If one should not observe the manner of holding the tube as shown in the illustration, and by any accident the cork should fall out, the palm of the hand should be held over the tube.

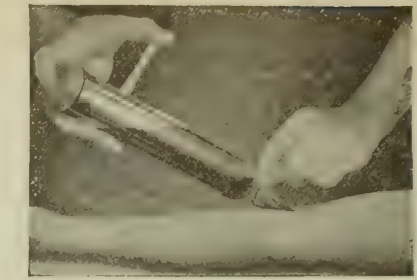


Fig. 6.

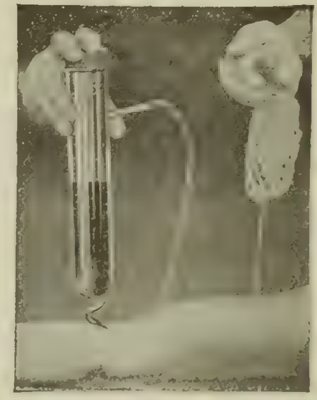


Fig. 7.

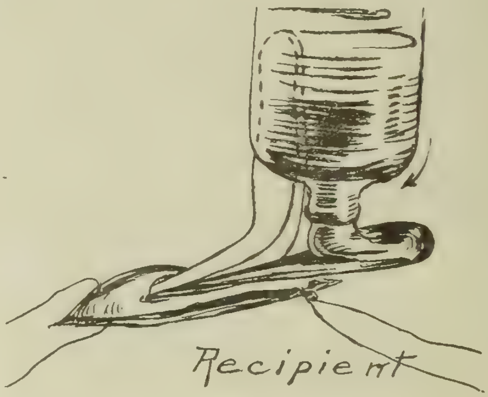


Fig. 8.

The cannula is withdrawn while there is still a little blood left in it. More tubes may be filled and emptied, if desired, using the same veins, or the same tube may be used over and over, first rinsing it out with cold sterile salt solution. It is better to point the cannula toward the hand of the donor rather than toward the heart, though both ways may be used. The veins are usually tied and cut, but if desired the slit may be sutured. If, for any reason, arterial blood is to be preferred, the radial artery of the donor may be used, as was originally done.

I have sutured and used the same vein in both donor and recipient four times, finding it patent each time. When exposing the vein, its direction should be noted, and *one cannot expect the tube to fill if the pump is attached while* *the tube is inserted in the donor's vein.* Many other veins in various parts of the body may be used.

I have several times transfused patients by pointing the tube toward the hands, that is, injecting the blood against the circulation. In no case was there any evidence of congestion of the hand. This seems to me to be another argument that circulation is not reversed when an arteriovenous anastomosis is made. For, if it were reversed, it would seem to me that the hand would become somewhat congested when 250 to 300 cc. of blood is injected in this manner below the elbow.

A criticism of this method has been that it requires a short incision over the veins. This is not at all true, as I published in May, 1915, that the tube could be attached to a needle in suitable cases. Personally, I prefer a short thick-walled rubber tube connection, when using a needle, rather than have metal in connection with the glass. (Fig. 9). By this means I have filled five tubes without once removing the needle from the donor's vein. The recipient's vein will usually require incision. *It is not at all necessary to paraffin or prepare in any way the needle and rubber tube connection, except to boil them and moisten with a little salt solution or sterile water just before using.* I have frequently filled the same tube two or three times without washing the tube with sterile salt solution. However, I prefer to use a clean tube for each tube full of blood desired.

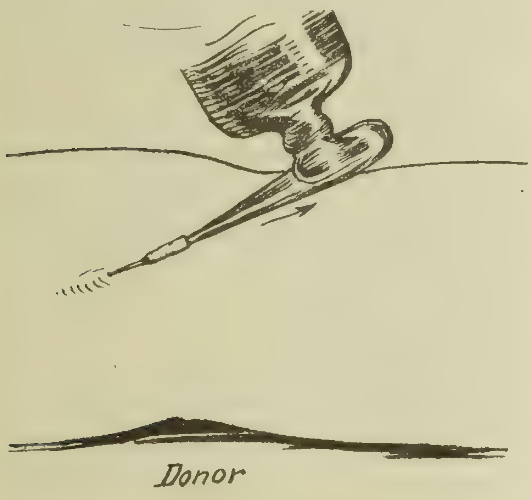


Fig. 9.

The tubes should always be kept sterile and paraffined ready for emergencies. Several times I have done three transfusions in one day, and on one occasion four transfusions, so that the necessity of keeping plenty of tubes ready is easily seen.

As to the technic for new-born babies, the tube is filled with 100 to 150 cc. through a needle inserted into the donor's arm. (Fig. 9). Another needle is passed into the longitudinal sinus of the baby through the posterior portion of the anterior fontanelle (Helmholz), the needle in line with the sagittal suture. Its entrance into the sinus is determined by the escape of blood through the needle. The baby's head being held firmly, and the needle being held firmly, the tube full of blood is now connected to the needle, and with gentle pressure the amount of blood desired is injected. This should be done slowly, so as not to increase intracranial pressure. The tube is now detached from the needle and the needle removed. Very slight pressure will stop any oozing from the sinus. This whole procedure takes not over three to five minutes. As spoken of above, there will be times when this most simple procedure cannot be used. In these cases, the tube is filled with the needle connection as described, and either the external or internal jugular vein of the baby is used. Using the internal jugular is much easier than one would expect in practically all cases, although in such cases the technic is much more difficult.

TRANSFUSION CONCLUSIONS.

Transfusion may be said to be of value as follows:

Its greatest field of usefulness is for,

1. Acute secondary anemia, that is severe hemorrhage. For so-called "shock," uncomplicated by hemorrhage, it may be of great value, but too much has been claimed for it here. For hemorrhage of new-born babies, transfusion is specific and the use of the longitudinal sinus, as advised by Helmholz, is one of the most valuable advances of surgical technic. The tube is filled through the needle and emptied into the longitudinal sinus through the needle. For hemophilia transfusion is specific for the attack.
2. Chronic secondary anemia, frequently of great value. It is of no value in acute sepsis.
3. Acute primary anemia, such as acute leukemia, it is of no value.
4. Chronic primary anemia, such as pernicious anemia, of value, but only temporarily, and for variable length of time.

For pernicious anemia it is the most efficient method of treatment we have. Transfusion alone offers as much for pernicious anemia as splenectomy with or without transfusion, and carries none of the dangers of splenectomy. It usually brings about a remission by crisis, whereas other remissions come about usually by lysis, that is, slowly.

Reaction rarely follows transfusion of whole undiluted blood in my hands.

Reactions are very common after transfusion of citrated blood. Massive transfusions of citrated blood may be dangerous, for whereas the percentage may be low, the total quantity of citrate in massive transfusions may be considerable.

BLOOD TESTS.

Wassermanns, especially of donor's blood, should be done when time allows.

Iso-agglutination tests should always be done, best in laboratory, between fresh bloods. Stock sera may deteriorate.

Transfusion without these tests may cause deaths, and even with these tests I have twice seen agglutination, the tests having been carried out by trained men.

In other words, there are undoubtedly serum reactions that we as yet do not know tests for.

A rough but fairly accurate bedside test may be carried out as follows:

Donor's blood.

1. 2 to 3 drops + oxalate (½%) or salt solution equals corpuscles.
2. 2 to 3 drops + distilled water equals serum.

Recipient's blood.

3. 2 to 3 drops + oxalate (½%) or salt solution equals corpuscles.
4. 2 to 3 drops + distilled water equals serum.

The oxalate or salt solution keeps the corpuscles free.

The distilled water lakes the corpuscles and gives serum.

On a hanging drop slide,

One drop of number (1) is added to one drop of number (4).

This gives donor's corpuscles to recipient's serum.

The same with (2) and (3) gives donor's serum to recipient's corpuscles.

These are observed for from 20 to 30 minutes, with microscope or hand lens, for clumping. If marked, this may be seen with the naked eye.

Blood tests, I believe, are not necessary for new-born babies, as bloods are not usually grouped until the child is about two years old.

Reactions are more likely to follow repeated transfusions, especially after four to five transfusions have been done and whether with the same or different donor.

I understand that transfusions at the front are not being done when urgently needed because of difficulty in having blood tests carried out. I should never hesitate to do a transfusion under such circumstances, for many more patients will be saved by doing the transfusion without blood tests than will be saved by not doing a transfusion with blood tests.

I wish to close by quoting a remark made by Dr. Crile several years ago: "Judiciously employed, transfusion will surely prove a valuable, often a life-saving, resource; injudiciously employed, it will surely become discredited." And I add that the reputation of transfusion is now too firmly established ever to be discredited.

THE SURGICAL TREATMENT OF EMPYEMA.*

BY WYMAN WHITTEMORE, M.D., F.A.C.S., BOSTON.

DURING the last five years I have been especially interested in thoracic surgery, and what I have to tell you tonight about empyema is based entirely on my own work at the Massachusetts General Hospital. My ideas of the correct surgical treatment of empyema have changed so much during this last year that this paper is based almost entirely on last year's work.

I shall limit myself to the surgical treatment of empyema,—not going into the signs, symptoms or causes. I shall avoid statistics as much as possible, believing that a man's impressions from doing a considerable amount of work in a certain subject are about as valuable, if not more so, than his statistics.

The old operation for acute empyema was an exceedingly uninteresting and simple one. But there was a mortality of about 20% following operation, and 20 out of every 100 patients that left the Mass. General Hospital alive became chronic cases. These figures may seem very high, and I believe they are higher than those in private practice. But a hospital patient, as a rule, does not have the diagnosis made as early or the operation done as soon as a private patient. And private patients, being in better circumstances, are able to carry out their convalescence with more care. I do not think these figures are extraordinarily bad when compared with those of other hospitals. Although I have not looked up this question very carefully, the mortality at one large New York hospital is at least 20%, and at another hospital not far from here, it is about 29%. However, these figures were bad enough to arouse considerable desire to better them, and with each effort to improve our results, the subject has become more interesting.

There is no question but that the old way of excising a rib, will, with good after-treatment, cure many patients, but the correct rib must be taken out and drainage established at the bottom of the cavity,—sometimes it is necessary to take out a second rib. When I do this operation at all, which is only very occasionally, I open up the pleural cavity between the ribs, put my finger in, retracting the ribs if necessary, and explore the cavity; drainage is then established at the bottom by excising a section of a rib. This can be done very rapidly and accurately with one finger inside the pleural cavity. It avoids taking out an extra rib, gives one a good idea of the extent of the cavity, and also establishes perfect drainage.

The danger following this operation (granted the patient does not die) is that the lung will not fully expand, become covered with a pyogenic membrane,—and then the case is chronic. It seems possible, and indeed very probable, that one important cause for the lung not expanding fully is that positive pressure is allowed to enter the chest through the drainage tube. In order to overcome this, patients were put on "blow-bottles,"—but few, if any, patients are in condition to use these during the first forty-eight hours after operation,—and this gives the lung an excellent chance to become adherent in a partly collapsed condition. And this is granting that the lung is not already partly collapsed at the time of operation. Once the lung is in this condition, with a thickened visceral pleura covered with a thick pyogenic membrane, I have never seen "blow-bottles" do much good. The convalescence is often an exceedingly trying and obscure affair to the surgeon. A patient will do very well, with normal temperature for a week or ten days, and then suddenly the temperature will go to 102 or 103. We formerly asked the help of the medical man to solve this condition, and every time that I have done so he has reported that the chest has not been drained sufficiently and that there is a collection of pus not draining. Taking his word as law, I used to do a second operation, but usually found an old cavity surrounded with a thickened membrane which was draining perfectly. There are various explanations of this condition, and one man's guess is as good as another's, and I frankly don't know just what does take place. There have been many devices made to form a valve that would prevent the positive pressure entering the pleural cavity. At one time a rubber dam was arranged over the drainage tube, again the use of a flap of skin was tried, but without success, at the Mass. General Hospital.

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* Read at the Mid-Winter Meeting of the Brookline Medical Club, February 4, 1918.

On the other hand, the following method has been used in the *desperately* sick cases with much success. Under local anesthesia the chest is aspirated between the ribs with a very large trocar; a tight-fitting catheter slipped through this and the trocar removed. The catheter is attached to a long rubber tube that goes into a bottle half filled with water. The end of the tube is under the surface of the water. The catheter is sewed tightly into place. In this way the negative pressure in the pleural cavity is not changed, and with each expansion of the lung the pus is forced into the bottle. The catheter will stay tight with the chest wall for about a week. The amount of drainage for each 24 hours is measured. At the end of five or six days, an electrical suction apparatus is attached to the tube. This works constantly, and when the 24-hour amount of pus is down to 2 oz., I remove all drainage apparatus.

This method will probably cure the very early cases, in which there is only a cloudy serum containing a high leucocyte count, but in the cases in which there is thick pus and lymph, and where the lung is partly collapsed, it is not done with the idea of curing the patient, but of tiding him over his desperate condition.

I have done a good many cases in this way—2 have died—(both desperately sick cases before operation) one a woman with double pneumonia and a streptococcus empyema, who died four or five hours after operation, and one an infant less than a year old, who had a double bronchopneumonia, and who pulled the tube out. One case became chronic as I was unable to do a second operation owing to the patient's having syphilis.

In the cases *not so desperately* sick the Lilienthal operation is the one of choice. In this operation a very long incision is made between the ribs—one extending from close to the vertebral column to within an inch or two of the sternum. The ribs are spread wide apart with a rib spreader. This gives an opening large enough to put one's whole hand into the cavity. Lilienthal sucks out all the pus and lymph with a suction apparatus. As we have none in the operating room, I wipe out the pus and lymph with gauze, and then remove all the pyogenic membrane covering the costal and visceral pleura. The surface of the lung is then a bright red color, the greyish-white membrane being entirely taken away. With positive pressure from the gas oxygen machine or intertracheal ether, the lung is forced to expand fully, and it actually does come up to the chest wall. The wound is then closed tight except for a cigarette wick at either end of the incision.

Before one is familiar with the technic and sees how well patients go through the operation, one is apt to think this is a very dangerous and radical operation to put these patients through. It is surprising to see how little shock there is, and how much one can do to the surface of the lung without upsetting the patient's condition. Following the operation the patients are more comfortable than following any other operation for empyema,—the convalescence is much shorter, and they are healed up, as a rule, in from three to four weeks. Following the old method of operation on these cases, they were in the hospital six or seven weeks (or even longer) and then left with a drainage tube in, and reported to the out-patient department for some time—even if they did not become chronic with a persistent sinus. Following the Lilienthal method there is often no discharge except a little pussy serum and at the end of a week or ten days all drainage is removed. The last two cases that I have done left the hospital at the end of three and one-half weeks, with no discharge at all, and the wounds entirely healed up.

Although Lilienthal has been doing it for a couple of years, it is a very new operation in this part of the country, and I have done only 12 cases. They have all done well except one baby. In this case, the afternoon following the operation, he was sitting up eating his supper, the following day he was playing in his crib, and the next day while I was making a visit he had a convulsion, became paralyzed on one side and died that afternoon with symptoms of a cerebral embolus.

Of course, one's first thought is to do something that will relieve the immediate septic condition—in other words, save the patient's life, and secondarily, to do something that will prevent the case from becoming chronic. This can be combined at the Lilienthal operation in many cases, and it is only in the desperate ones that I believe it necessary to wait a few days or a week after draining the chest, before doing the radical operation. But I want to lay stress on the fact that this or some other radical operation must be done very early in order to prevent a bad result.

It is important in all operations for acute empyema, when there is a large amount of pus, to allow it to escape slowly. I know of two deaths on the operating table after making a large opening and allowing the pus to escape very rapidly. Although there was no autopsy on either case, yet it seems to me the deaths may be explained either from an acute dilatation of the heart or possibly from a so-called "fluttering of the mediastinum." Given a case with a large amount of pus and the lung collapsed, letting the pus out very quickly suddenly takes away the support of the mediastinum on one side. This is seen and spoken of especially in the one-stage operation of lobectomy and is a very distressing thing. When this happens or when the patient's condition becomes alarming through difficulty in breathing, on account of a large, open pneumothorax—if the edges of the wound are brought together and held tight for a few minutes, the condition rapidly improves, and then one can again go on with the operation.

The first question that naturally comes up is when to operate? Operate as soon as you can make a diagnosis. One would probably do well to leave the diagnosis in the medical man's hands, but I believe one should operate when the aspiration fluid shows a cloudy serum with a cell count of 50% or more polynuclear leucocytes.

The prognosis depends on the patient's condition and the kind of germ that causes the infection. In my experience the streptococcus cases do very badly, but fortunately they are not numerous in civil life. The pneumococcus cases do better than any others. There is a higher mortality in infants and children than in adults.

The after-care is very important. All patients, following whatever operation you elect to do, should be made to use "blow-bottles" until the sinus is closed and they are entirely well. Fresh air and good food and certain breathing exercises should be insisted on. They should be carefully followed until entirely well and able to resume their normal life.

The mortality with these operations has been reduced from a little over 20% to 12%. There will always be some mortality, as many cases are in very serious condition before operation; but early diagnosis and early operation will help to reduce the bad results.

It may interest you to hear what autopsy in these cases showed from 1901 to 1911. Out of 30 autopsies, 14 died from septicemia, 5 from pneumonia, 3 from pyemia, 1 from peritonitis, 2 from multiple abscesses of the lung, 1 from defective closure of the foramen ovale and thrombosis of the left pulmonary artery, and in 4 no definite cause was found. The commonest cause of death was septicemia—the majority being streptococcus septicemia and a few pneumococcus septicemia. It seems to me that in the septicemia cases this was very likely only a terminal affair, as in several of my cases blood culture taken a few hours before death showed a streptococcus septicemia, whereas blood culture taken 24 to 48 hours earlier showed no growth.

ENCAPSULATED EMPYEMA.

There are occasionally cases in which there is a suspected small area of pus in the chest, which cannot be definitely located. These should be opened up wide and thoroughly explored. The guide to a small amount of encapsulated pus—between the lobes or between the diaphragm and the lower lobe—is adhesions. After finding these the general pleural cavity should be walled off with hot, wet gauze, in exactly the same way as one walls off the abdominal cavity before opening an appendix abscess, then the adhesions may be broken through and the abscess cavity opened and drained.

I believe an exploratory thoracotomy should be done as readily as an exploratory laparotomy. The thoracic cavity may be opened and explored just as safely as the abdominal cavity. And if nothing pathological is found, it can be closed up tight and the patient recover just as readily as from an exploratory laparotomy.

It is better to do this exploration under positive pressure, as this will prevent the collapse of the lung when there are no adhesions present. Of course when there are adhesions the lung will not collapse anyway, but no one can tell, definitely, before operation whether or not these are present. In order to convince myself and the anesthetist at the hospital that it was better to do an exploration under positive pressure, I did two explorations within a week—one under gas oxygen and the other under intertracheal ether. On opening the pleural cavity in the first case (the one done under gas oxygen) there was a tremendous thrashing back and forth of the lung, the patient became shocked very quickly and was put to bed with a pulse of 170 to 180. The other case, that done under intertracheal ether, had a much larger exploration done—there was no thrashing of the lung and her pulse did not go above 85 either during or following the operation.

The best position for exploring the chest and for nearly all thoracic operations, except when the process is definitely anterior in an upper lobe, is the *prone position.* The patient is placed flat on his face with arms extended up alongside his head. This gives a very large field to work in, and for some reason the lung does not tend to collapse so readily as in other positions. Then, too, the sound lung can work easily and normally, whereas in any other position it is underneath and is handicapped in its efforts to expand. (In cases of interlobar empyema that have perforated into a bronchus, the head should be lower than the trunk, so that pus can and will be draining out the patient's mouth during the operation. The catheter in intertracheal ether aids rather than hinders in accomplishing this end.) This position allows one to explore readily, between the diaphragm and the lower lobe, the interlobar fissures, and the "Gutta" which is formed by the vertebral column and the ribs. This is a very favorite place for pus to collect and one not often explored unless the patient is in this position.

CHRONIC.

When a case should be called "chronic" is largely a matter of individual opinion—and may not be of much importance—but, I believe, many cases are chronic before they have ever been operated on. When a cavity is lined with a thick pyogenic membrane and containing thick pus and lymph, there is certainly nothing very acute about it, and I think that one reason why so many cases became "chronic" in the past was because surgeons did not recognize them as chronic in the beginning, and did the same operation regardless of whether a case was really an acute one or a chronic one. These cases I have already dealt with in the early part of this paper, and so for the sake of discussion I shall consider, tonight, as chronic only those cases that have been operated on and that have a persistent discharging sinus.

A perfect cure is one in which the lung expands fully, there being no discharging sinus, and the patient being able to resume his normal life.

Although the Schede operation, in which the ribs overlying the cavity and the parietal pleura are removed, may result in an entirely healed chest—so that there is no discharge—yet the lung never expands. About 50% of these cases heal up.

There is one way to get a perfect result—do a Schede operation and then do a complete decortication of the lung. Turn up a large skin and muscle flap—take off all ribs overlying the cavity—remove the costal pleura, which is often a third to a half an inch thick—then cut through the visceral pleura to the lung tissue and carry this incision across the lung. It is a remarkable sight to see this thin line of incision stretch wider and wider with each breath, so that in a few moments it is one-half to one inch wide with the lung trying to expand through it. The visceral pleura is then entirely dissected off the lung and with pressure from intertracheal ether the lung expands to the chest wall. Without any pressure it will expand about half way. In some cases the dissection is very easy, as one finds a good line of cleavage; in others it is very difficult, there being no good line of cleavage—and one must dissect carefully and slowly. However, making a few small holes in the lung tissue does no apparent harm.

In the last case that I did, I changed the technic a little, and instead of resecting five or six ribs, I resected only one, and then cut through the others overlying the cavity and retracted them one side. This made the operation a little more difficult as my approach to the visceral pleura was not so good and it was harder to take off the costal pleura, but it left a better chest wall, as the ends of the ribs were brought together and one was actually fastened.

The wound should be closed tight,—a small rubber tube is placed at the bottom, but this is tied off. At the end of 48 hours, this is opened and the serum is allowed to escape and then is shut off again. To enable the lung to expand fully, it is necessary to close the wound tight. My hope is that the lung will become adherent or partly so when fully expanded, and this should take place within 48 hours.

These cases should be carefully prepared for operation, and some simple drainage operation may be necessary before doing the radical one. Last summer I had a Boston University student who had been operated on three or four times; drainage had never been at the bottom of the cavity, so my first operation was to find out just what I was dealing with and then drain the cavity at the bottom. He went home for three weeks and then came back and had a decortication done. He did perfectly and is entirely well today and can do anything in the line of exercise he ever could,—in fact, I have just heard that he has been accepted in the draft for the Army.

The after-care is about the same as that following operation for acute empyema. The use of "blow-bottles," breathing exercises, good food and fresh air should be insisted on.

Here again the question comes up, When should one operate on these cases? The best answer is that one should never have any such cases, and with perfect surgery I don't think we will in the future. But to be practical, we know there are many such cases now. Two years ago, I thought one should wait one year after the original operation—one year ago I thought two or three months. At present, I think, from the original operation and from the patient's convalescence in the hospital, one should be able to decide whether or not he will get entirely well or need further surgery. If one decides that he needs another operation I think the radical operation should be done in a week or so after the first operation. The bad results have come from waiting too long before doing a radical operation.

The earlier the radical operation is done the better the prognosis. Children and young adults—up to 30 or 35 years—do better than older people. My best cases have been in those under 30. I have had no mortality, yet two patients ranging in age from 40 to 50 have not healed up entirely, but their lung expansion is larger than before operation. Both these cases were poor, ignorant foreigners that we could not handle properly after they left the hospital. The mortality following decortication of the lung has been reduced from 20% to 0. But I should add that I have done only eight such cases this last year. However, this does not seem such an insignificant number when one realizes that between the years 1901 and 1911 there were only five such cases done at the hospital.

I feel very sure that the best results in both acute and chronic empyema (following a decortication) are to be found in those cases that are closed up practically tight following operation. This gives the lung its only chance to expand. Surely, draining a chest with one or two large rubber drainage tubes, in and out of which positive air pressure rushes with each respiratory movement, is no longer modern surgery.

If you will stop a minute and think of the mechanism of respiration, I think you will agree with this statement. The diaphragm plays the leading part in respiration. When it moves downward it sucks air into the lungs, and they can easily expand on account of the negative pressure in the thoracic cavity; when it moves upward it forces the air out. Now, when a patient has a large hole in the chest wall the lung cannot expand because positive air pressure is, and must be, sucked in through the opening at the same time that air is being sucked into the lung. Therefore, it very soon becomes partly collapsed, a cavity is formed, the case becomes chronic and cannot be cured until something is done to overcome this collapsed condition.

My idea of the use of "blow-bottles" is not primarily to make the lung expand, as I do not believe that they do this, but to force the diaphragm to work very hard,—and this is accomplished in the effort of blowing the water from one bottle to the other, and at the same time whatever pus or serum has collected in the chest cavity is forced out. A very good illustration of this is seen following the Lilienthal operation. After removing the wick there is a small sinus,—and the patient is urged to use "blow-bottles" as often as he can, but especially when the dressing is changed. At this time, when blowing hard, the pus is actually driven out of the chest with considerable force.

Finally, I want to say a word or two about anesthesia, as I find this is a very important part of the operation.

Paravertebral anesthesia is the most satisfactory of any regional anesthesia in thoracic surgery. It is difficult to resect ribs with any ordinary local anesthesia without causing some pain to the patient. But with paravertebral it can be done very easily. It seems to me to *be ideal* in some of the old chronic cases and in the extremely sick, acute cases in which one is going to do some simple drainage operation. Unfortunately, the supply of novocaine gave out at the hospital some time ago and so I have done only five such cases; four were perfect, the other not so successful, but in one a large resection of ribs was done, and I could operate just as freely as if the patient had been under a general anesthetic.

Gas oxygen appeals to me very much,—I use it now in practically all cases of empyema. I have used it in old people and in infants, and have never seen any bad results. One can get enough pressure to expand the lung fully in doing a Lilienthal operation, but following a decortication in an old chronic case, the gas oxygen machine does not give enough pressure to expand the lung quite fully to the chest wall. So it is probably better to use intertracheal ether. This latter method of anesthesia is very simple and effective and I have never seen any bad results.

All thoracic surgery is a most interesting field to work in. Our ideas are constantly changing and advancing. One must be an enthusiast and an optimist, indeed, as there are constantly very discouraging things and patients to deal with. But I think the last year has seen progress made, at least in the immediate mortality. Whether or not these operations for empyema will prove to be the final correct ones the future alone can tell.

CLIMATE IN TUBERCULOSIS.

By H. F. Gammons, M.D., Carlsbad, Texas.

Climate is the sum of all the meteorological conditions of a locality. The nearness to bodies of water, the latitude and altitude and prevailing winds are of the most importance and, in tuberculosis, the proximity of smoke- and dust-producing industries must be considered.

The physiological effect of hot climates is to increase the activity of the skin and liver, to stimulate the nervous system and to cause sluggishness of the muscular system and digestive system. Cold climates stimulate the digestive and muscular systems.

Live air is the most nourishing, but drafts are to be avoided as they tend to produce not uniform circulatory changes. The air in a place of great altitude contains a smaller amount of oxygen to a certain amount as compared with air of lower altitudes, due to the fact that the molecules of air are more separated at higher than at lower altitudes.

Air in pine districts was formerly thought to be very helpful in treating tuberculosis, and Dr. Mary Lapham and other observers in North Carolina and other pine districts report very good results at their sanatoria, due, as they seem to think, to the air, in a great part.

The question of climate valuation in the treatment of tuberculosis has received many and varied answers. On account of a lack of concrete facts, this question bids fair to be unanswered in a definite and convincing way except to men who have had an opportunity to study the disease in different climates and especially comparing damp and dry climates.

Klotz[1], after studying group cases in Vermont and California, concludes that greater and more lasting benefit would be obtained under the climatic conditions of California than under those in New England.

Trask[2] says "the best climate for one affected with pulmonary tuberculosis is that which furnishes a favorable atmosphere for the greatest number of hours of the day and the greatest number of days of the year. The favorable atmosphere must be cool, or at least it must not be hot for long at a time, nor must it be too cold, although cold is less objectionable than heat."

Cornick[3] says "If, despite the wonderful advancement of modern chemistry, a century's time had to elapse from the discovery of oxygen until the new element, argon, was found a few years ago, to be also a constituent of the atmosphere, we may hardly hope in the current generation to reach a universally accepted solution of all the mooted questions regarding the influence of climate on pulmonary consumption. While there is no general agreement, for example, among climatologists as to whether the aerial rarefaction of high and sunny mountain climates, where many consumptives get well, is to be regarded as a help or hindrance to the sunshine and dryness in accomplishing this result, there is one point, at least, on which there is substantial unanimity, namely, that in the climatic treatment of pulmonary tuberculosis the factors of dryness and temperature are favorable in proportion as they permit an open-air life in winter and summer, by day and by night."

Altitude was formerly thought to be a great help in the cure of tuberculosis and this was due to the efforts of Archibald Smith who, in 1848, went to the Andes to study climate. He found that there was more tuberculosis at Quito than at the higher mountain levels and consequently felt that there was an immune zone between the lower city and the higher mountain places. Observers in this country have felt that the value of climate was in altitude, but it has been proven that such is not the case and we know that tuberculosis is an economic and social disease.

It has been my pleasure to have served in two good sanatoria where climatic conditions are very dissimilar; the one, the Rutland State Sanatorium, located in the noted New England climate; and the other, the Texas State Sanatorium, located in the arid Southwest. In Rutland we had, during my service, very few cavity cases and these tended to progress. In Texas most of our cases have, or have had, cavities which tend to heal or have already healed.

The signs in the chest in the Texas cases are more limited to irregular breathing, the catarrh is not as much noticed and in those cases with the catarrh of the bronchioles or alveoli, the adventitious sounds are fewer in number, diffused and of a crepitant character.

In Rutland I noticed more normal vesicular breathing and the adventitious sounds were more confluent and louder sounding.

In the Texas cases there is less fever, cough and night sweats, fewer laryngeal infections, mucous membrane colds and attacks of rheumatism.

In Texas we notice marked dryness of the mucous membranes, while in Rutland moist catarrh is the rule.

The very warm weather in Texas, which is of a not long duration, was very depressing, although probably no more so than the warm weather of the more humid cooler climates, while in Rutland the cold fall and winter months were very stimulating and patients seemed to do much better in the cold weather.

There is a prevailing optimistic temperament in the Southwest, due to the almost continual sunshine, and also there is a fixation of carbon in the system as the result of this sunshine which must have a very decided curative effect.

CONCLUSIONS.

A person with an ulcerative case of tuberculosis who has given his home climate a chance and at the same time has coupled the climate with other standard treatments for tuberculosis, such as fresh air at all times, rest, and diet and contentment of mind, and who is at a standstill, will, if he is financially able, unquestionably obtain good results in the Southwest. It is necessary, however, for such a patient to have all other factors necessary to the cure, such as rest, diet, etc.

If one is fortunate in being able to take the cure in one of the sanatoria of his vicinity under the proper regulations, it is better than to go to the Southwest and to be compelled to care for one's self or to "rough it."

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[1] Klotz: Group Studies in Tuberculosis under Different Climatic Conditions, American Review of Tuberculosis, Vol. i, No. 2.

[2] Trask: Reprint of The Journal of Outdoor Life, Vol. xiv, from Public Health Reports, U. S. P. H. Reports, Feb. 23, 1917.

[3] Cornick: Some Personal Observations on the Management and Treatment of Pulmonary Tuberculosis at a Climatic Resort, Texas State Journal of Medicine, September, 1906.

Book Reviews.

Manual of Psychiatry. By I. R. de Fursac, and A. J. Rosanoff. New York: John Wiley & Sons. 4th Edition. pp. 522.

This revision of a very concise and useful book, owing to the war in Europe, and the difficulty in close coöperation caused by it, has been left to the American author by agreement. The chapters in the first part, dealing with etiology, history-making, general prognosis, prevalence of mental disorders, prevention, and medico-legal questions, and in the second part, those dealing with Huntington's chorea, cerebral syphilis and traumatic psychoses, are either wholly new or almost so. The chapter on general paresis is perhaps particularly well done, for not only is a distinct and clear picture given of the mental symptoms, but the physical ones are adequately described, and modern pathology and modes of testing are not ignored. The chapter on traumatic psychosis might well have been more full, as the chronic confusional mental states with delusions which not infrequently follow severe head injuries, deserve fuller description, as well as the dementia. On the whole, considering its brevity, we know of no more satisfactory book on mental disorders, and this manual, improved by this revision, will doubtless become increasingly popular and deservedly so.

An Inquiry Into the Principles of Treatment of Broken Limbs. A Philosophico-Surgical Essay, with Surgical Notes. By William F. Fluhrer, M.D., Consulting Surgeon to Bellevue and Mount Sinai Hospitals. New York: Rebman Company.

This well printed and attractively illustrated book is distinctly worth reading. The author describes it as a "philosophico-surgical essay:" he should have added the adjective "historical," since the book abounds in references to the surgery of New York of 40 to 50 years ago.

The methods described were undoubtedly very effective in the author's hands: the fundamental principle of rapid reduction and immediate immobilization of broken bones is undoubtedly correct; and the addition of tin strips to plaster bandages in fractures of the leg might at present be adapted with good results. The author was evidently direct and original in his work, and his story is well deserving of its present form. The value of the volume is rather from the standpoint of collateral reading, than from that of a textbook; its sidelights upon the recent past are illuminating in the consideration of many of the strongly advocated measures of the immediate present.

The Control of Hunger in Health and Disease. By Anton Julius Carlson. Chicago: The University of Chicago Press.

Dr. Carlson presents in book form the summary of the work of himself and associates in regard to hunger and appetite. While the work has been published in scientific journals as it developed, the present book is not a collection of previously printed papers, but an entirely new production, in the light of the completed work. It is in a sense a monograph, although the treatment is never essentially technical. It is, indeed, a most happy thought on the part of the author to present his work in readily available form. Dr. Carlson's work is perhaps too well known to require extended comment. It may not be out of place, however, to emphasize the practical applications of many of his laboratory experiments. His careful differentiation between hunger and appetite is noteworthy. His sane conclusions regarding the use of bitter tonics will be instructive to most of the profession. In general the book is one of a very small group of publications, in which the author is able to present, in concise form, valuable and interesting subject-matter almost exclusively based on first-hand observations.

Standard Surgical Dressings. By Nellie A. MacKenzie, R.N. Boston: Whitcomb & Barrows.

This manual, issued by the Surgical Dressings Committee of the New England Section of the Woman's Department of the National Civic Federation, contains concise and accurate directions for making standard surgical dressings and represents practice employed in the work of the committee at the Peter Bent Brigham Hospital, Boston, in the preparation of dressings for the Entente Allies in the present European War. It is conveniently divided into seven chapters, dealing respectively with materials, technic, sterile dressings, non-sterile dressings, packing, sterilization, storage and shipment. It is well illustrated with a number of text cuts and diagrams, and has a prefatory note by John W. Eliot, M.D., chairman of the Surgeons' Advisory Committee. This monograph is not only of immediate value in the continued work of the committee, but should form the basis of a subsequent work by the author on the preparation of surgical dressings, of which there is at present no English textbook in existence.

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TRENCH FOOT.

The present view of trench foot has broadened to such an extent that it has become somewhat difficult to gain an entirely clear idea of the relation between the various phenomena coming under this head. In early classifications, most writers were disposed to consider it as a form of frostbite. For example, Rathery and Bauzil in *Paris Médicale* of March 31, 1917, apparently regard it in this light, and treat the symptoms accordingly, although their method is new. But as more facts have been collected, and the conclusions are now published, considerable doubt has sprung up respecting many points in the etiology of the cases reported from the various fronts. One fact clearly emerges from the discussion—cold or frost alone is not the essential factor. To produce trench foot cold and wet must be combined, and it is becoming fairly certain that they are associated in most cases with constitutional elements.

In one of the most recent accounts (*Gazetta degli Ospedali,* October 21, 1917) Tassone states that, in addition to frost and wet, the immobility of the limbs is the most important factor. Similarly, Borchard (*Zeitschift für Chirurgie,* 1916, xliii, p. 142) notes that resting the legs is favorable to the occurrence of "frost-gangrene," implying that the inactive circulation is a causal influence. This explains why the feet are attacked first, and the shins next, the feet being farthest from the heart. On the other hand, Tassone points out that soldiers who keep up a vigorous circulation by marching and other muscular exertion usually have sound, healthy feet, and escape not only edema and gangrene, but also the milder forms of frostbite. The evil tendency is aggravated by the footgear of some armies. British surgeons frequently complain that the wearing of puttees and tight-fitting boots predisposes to trench feet by constricting the circulation. The puttee appears to be particularly objectionable, as it soaks up water which freezes on the legs. In spite of this obvious fault, puttees and leggings, which have the same defects, are still in use. It may be noted in this connection that the prevalence of trench foot has an important bearing, not only on the question of footgear, but also on army discipline in general. Among nations, the Germans and Bulgarians, with their heavy boots and woolen stockings, have suffered relatively little, whilst the Russians, owing to carelessness and shortage of leather, have been in the worst plight.

Since trench foot occurs in healthy, well-clad men, some authors have sought to connect it with constitutional causes. Thus Lieutenant Longridge (*The Lancet,* 1917, Vol. i, p. 62) observes that the blisters and sores are like the trophic sores of diseases of the nervous system, and he deduces a central origin. He adopts the thesis that trench foot is due to "leakage of neuro-electricity." This seems a rather fantastic effort to find a cause, but it may be readily admitted that nervous inhibition plays an important part. Some evidence in favor of this view is supplied by Ellis (*British Medical Journal,* 1917, Vol. i, p. 573). He noted the curative effects of nitroglycerine through dilatation of the peripheral vessels.

More recently, Raymond and Parisot have published a series of observations which tend to show that a mycelium is the cause of trench foot. They isolated an organism of this species from the water of the trenches (*Société medicale des hôpitaux de Paris,* October, 1917). The mode of action is described briefly as follows: Soldiers stand for hours in water; their shoes and stockings become soaked, and the mycelium gradually penetrates the skin and tissues. Their method of treatment, which has the approval of the highest French authorities, consists in gentle cleaning of the skin with boiled water, in which soap is dissolved, and the application of compresses of sterile gauze soaked in a solution of powdered camphor and sodium borate. Care is taken not to break the skin or the blisters, but in cases of abrasion, a powder of camphor, sodium borate, betanaphthol, and eucalyptus is used. In most cases the infection is thoroughly eradicated by this treatment. It is applicable to the cases of frostbite, and owes much of its special merit to its rational character and avoidance of the older methods of rubbing with ice or snow, incision of the blisters, and immobility of the feet. It is better to use tepid water, gentle massage, and passive hyperemia.

The most valuable part of this study relates to treatment and problems of gangrenous change. Trench foot exists in at least four stages—the neuritic, producing pain; the edematous without discoloration; the edematous with blisters; and the gangrenous, partial or circumscribed, with redness. Captain A. D. Haydon describes, in addition, septic cases, with more or less constitutional disturbance, with fever, and still graver cases with cellulitis and purulent infection extending up from the dorsum of the foot (tendo Achillis) to the shin. Such cases are complex, in which it is difficult to disentangle the etiological elements. They must be treated by means of vaccines, antistreptococcic serum, injections of antiseptics into the veins. For the moist gangrene the best remedy is iodoform dissolved in ether, one part in ten. Spreading gangrenous cellulitis is noted in the worst cases,—a condition which he treats by free incisions, drainage, and sometimes amputation.

Trench foot accounts for so much preventable suffering and disability that we should be less than human if we did not point out two very obvious criticisms. Most of the surgeons abroad agree that waterproof shoes and warm woolen stockings, over which flannel is drawn in winter, are prophylactics. Some writers suggest rubbing the feet with grease. So far as we have observed, much attention is paid to the shape of the soldier's feet, to flat foot, and the style of the shoes, but the essential things are too often overlooked.

VOCATIONAL REHABILITATION OF DISABLED SOLDIERS.

On January 14, 1919, a most important conference met at Washington to fix on a program for the re-education of crippled soldiers of the American forces. Invitations to attend this conference were sent out by the Surgeon-General of the Army, at the request of the Secretary of War, to representatives of all government departments and private agencies which might be interested in the question. The attendance at this conference represented the following: Surgeon-General of the Army, Surgeon-General of the Navy, Surgeon-General of the Public Health and Marine Hospital Service, Bureau of War-Risk Insurance, Bureau of Education. Federal Board of Vocational Education. Department of Labor, Federal Compensation Commission, Council of National Defense, Department of Civilian Relief of the American Red Cross, Red Cross Institute for Crippled and Disabled Men, American Federation of Labor, Chamber of Commerce of the United States, National Association of Manufacturers.

The Surgeon-General of the Army presented a program which had been worked out by his office, providing for a comprehensive system of reconstruction, medical and economic, to be carried out under military auspices. The other conferees brought forth the argument that while medical and surgical repair were well within the scope of the surgeon-general's work, vocational training was a civilian matter, and should be cared for by civilians. It was also maintained that the after-care of the disabled soldier was already delegated by Congress, in some degree, to the Bureau of War-Risk Insurance, and that several other departments had very definite interests and responsibilities in the matter.

After much discussion, a committee was instructed to draw up a program to be followed. This committee met several times, and on January 21 appeared before the conference, bringing the draft of a bill for submission to Congress, calling for the creation of an inter-departmental commission to be known as the Board for Vocational Rehabilitation. After several amendments had been made, the bill was presented to the Surgeon-General of the Army, for transmission to the Secretary of War, and is now being introduced into Congress.

The measure as adopted by the conference provides for the vocational rehabilitation and return to civil employment of persons discharged from the military or naval service of the United States, who have been disabled in the line of duty when in such service, when the result is dismemberment, or injury to sight, or to hearing, or other disability, including disease. When mustered out of military service, such disabled persons shall, upon the order of the Bureau of War-Risk Insurance, follow the courses of vocational rehabilitation provided for by the Board of Vocational Rehabilitation, which is created under this measure.

The Bureau of War-Risk Insurance is empowered to order any disabled person who is unable to pursue his former occupation or some other gainful occupation, to follow the vocational rehabilitation courses. The same compensation as that given for total disability is to be allowed while the disabled person is pursuing these courses, and compensation may be withheld if the courses are not followed in a satisfactory manner.

The Board of Vocational Rehabilitation is to include one representative, respectively, of the Department of the Treasury, Department of War, Department of the Navy, Department of Labor, Federal Board for Vocational Education, and the members of the Board are to serve without compensation except for traveling and other necessary expenses.

The Board is authorized to establish three advisory committees,—one on agriculture, one on commerce and manufacture, and one on labor,—such committees to consist of persons who have special ability and experience with regard to the training and employment of men in agriculture, industry, and commerce.

The Board is to establish courses of vocational rehabilitation, which are to be given in connection with schools already established, or with industrial and commercial plants whereever possible. Provision is also made for the building of special schools where the need arises.

All medical and surgical work necessary to give functional and mental restoration to disabled persons in military service shall, until their discharge, be directly under the control of the War Department and the Surgeon-General; disabled persons in naval service shall, until their discharge, be cared for by the Navy Department and Bureau of Medicine and Surgery of that Department. After discharge, functional and mental restoration are to be cared for by the War-Risk Insurance Bureau. Whenever pre-vocational work, mental or manual, is employed by the above agencies as a therapeutic measure, a plan shall be arranged between each of these agencies and the Board for Vocational Rehabilitation, in order to provide for a continuous process of pre-vocational and vocational training.

Ten million dollars are to be appropriated from the Treasury for the carrying on of the work.

REDUCTION IN PAY OF OFFICERS IN THE FIELD.

A law which has been causing much discussion of late is that which takes from Army officers in the field who have dependents, the allowance for quarters which officers behind the lines receive. Though it might be supposed that a sound military policy would favor those nearest the fighting line, and so in greatest danger, and although in circulars now issued to candidates for commission in the Army the Government promises quarters or commutation, by a decision of the War Department, officers who are now serving in France, on the Mexican border, or in training camps have been deprived of this allowance. The commutation for quarters is paid when the officer is ordered on some detached service or city service in Washington or elsewhere. Never is there any consideration taken of the officer's family, as to quarters.

In times like these, it stands to reason that officers' families, as well as other people, are in need of the assistance which the allowance for quarters would give. Bills have twice been introduced into the Senate, which have attempted to restore the allowance, but have in both cases failed to pass on account of opposition from the War Department. The Quartermaster-General issued a statement to the effect that the annual expenditure for this purpose would amount to about thirty million dollars. The mere fact that the Quartermaster-General should issue such a statement, which practically means that the Government is depriving the families of Army officers of that amount, would seem almost enough to bring about the passage of a bill which has recently been introduced into the House of Representatives, to secure for officers with dependents while on duty with troops, the commutation for quarters which they previously received.

There can be no doubt that the cutting off of such an allowance is a hardship to the officers and to their families. It is a well-known fact that many wives of officers are seeking employment to help support their families while their husbands are serving on the Mexican border or in France.

It is necessary for the effective development and maintenance of our fighting forces that they themselves shall be properly housed, and also that their families be kept in comparative comfort. The effect of the present War Department policy is to decrease the pay of every officer who is on duty with a tactical unit at camp or cantonment either at home or abroad, while the pay of officers not on duty with troops remains the same as in time of peace. To quote from the *Defense Bulletin:*

> "No pacifist could contrive a more discouraging handicap to the successful prosecution of the war than to cut the pay of officers nearly 25% as soon as they start to fight or to teach others how to fight, and this at a time when their situation and that of their dependents makes them peculiarly susceptible to disastrous effects of the rapid and great increase in the cost of living."

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MEDICAL NOTES.

Low Death Rates Despite the Severe Cold.—After two months of the most severe winter weather which this city has ever experienced, New York emerges with a health record which shows a saving of over 2600 lives over the death toll paid by the city during the corresponding months of 1917.

For the first two months of 1917 the death rate was 16.97 in 1917, as against 15.51 for the same period this year. If the death rate experienced in the first two months of last year had prevailed during the two months of this year, the number of deaths would have been 16,608. As a matter of fact, only 13,962 deaths occurred, which means a saving of 2,646 lives during the two months of 1918. When we consider the remarkable atmospheric condition prevailing during the two months past, and the fuel and food difficulties which arose during that time, it is a cause for congratulation on the part of the people of the city that so favorable a showing can be made.

The most noteworthy reduction in the mortality was that from lobar pneumonia, there having been a decrease of 450 deaths reported from this cause, as compared with the corresponding period of 1917. Pulmonary tuberculosis, which showed for the first time in many years an increased mortality during 1917, gives promise of being lower for this year, as during the two months under discussion a perceptible decrease in the death rate from this cause has already occurred.

The saving of life has been mostly among adults, a fact which makes the saving to the community the more valuable. The number of births reported during the first two months of 1918 was 22,021, as compared to 24,227 during the same period of 1917, a decrease of 2206. There was also a falling off in the number of marriages, only 8389 having occurred in the first two months this year as compared to 11,187 during the same months last year.

Smallpox in New York State.—Some time ago we commented on the prevalence of smallpox in various parts of Connecticut, and pointed out that unvaccinated communities, if invaded, would pay dearly for their failure to make use of the proven protective vaccination. According to a report just issued by the New York State Department of Health, a number of local outbreaks of smallpox occurred during the past year in various parts of New York State, in several instances the disease entering New York from Connecticut. In other instances the primary case came from Massachusetts, Canada, Ohio and from Pennsylvania.

Early in last November the disease made its appearance in central New York, the first case being discovered at Rome. From there it spread to Utica, where 47 cases resulted in the next two months, and to Frankfort in Herkimer County, 78 of them in the town and village of Frankfort.

Within the past few months over 250 cases of smallpox have occurred in various parts of the state, several of them within the city of New York. Moreover, as may be seen from the U. S. Health Reports, smallpox is prevalent not in New York State alone. Hence, in spite of vigilance, those who travel or who mingle with others may at any time come into close contact with persons capable of transmitting the disease. According to the State Health Department, a salesman was recently encountered who, while he was suffering from smallpox, had travelled over several counties before his condition was discovered.

Government to Supervise Medical Schools.—A special division of the Surgeon-General's office has been created under the charge of Major H. D. Arnold, M.R.C., which is to oversee the work of students enlisted in the Medical Reserve Corps under the section of the selective service act, which provides that students in "well-recognized" medical, dental, or veterinary schools may, with the permission of the Surgeon-General, be enlisted in the Medical Reserve Corps, which is not liable to active call to service until full professional knowledge is acquired.

The appointment of Professor Waite of Western Reserve to this board is a significant one, for he is a recognized authority on medical education. Not only does this appointment show that the nation is planning to see to it that the doctors who go into the Army are qualified to fill their positions, but it means that some medical schools will no longer be able to conceal their shortcomings. Should this board to which Dr. Waite has been appointed find that any student in the Medical Reserve Corps is not making satisfactory progress with his professional studies, he may be removed from the reserve list, and be made subject to call to active military service.

The direct result of such an investigation should help to standardize medical education, and make public the standing of medical schools.

Principal Causes of Death.—The Census Bureau has issued a statement with reference to mortality in 1916, showing that the "registration area," which contains approximately 70% of the population of the United States, reported for that year 1,001,921 deaths. Nearly one-third of these deaths were due to three causes,—heart diseases, tuberculosis, and pneumonia,—and nearly another third were due to the following nine causes: Bright's disease and nephritis, cancer, apoplexy, diarrhea and enteritis, influenza, arterial diseases, diabetes, diphtheria, and typhoid fever. Cancer and other malignant tumors caused 58,600 deaths in 1916, in the registration area. Of these, 22,480 resulted from cancers of the stomach and liver. The death rate from cancer has risen from 63 per 100,000 in 1900, to 81.8 in 1916. For the whole United States, the cancer mortality is not less than 80,000 per annum. The increase in cancer mortality has been almost constant, though part of this increase may be due to more correct diagnoses and greater care on the part of the physicians in reporting to the registration officials.

It is shown by the census announcement that the decline in the tuberculosis death rate has been most pronounced, due to the progress which has been made in its prevention and treatment. Those interested in the control of cancer may feel that educational activities along that line may be as successful in its control as they have been in the control of tuberculosis. There has been a steady increase in the number of patients seen in time for successful treatment of cancer, and a marked increase in the number of those seeking advice about pre-cancerous conditions.

Sectional Conference Plans.—Preliminary arrangements are now being made for six sectional conferences on tuberculosis next fall. The time and place of each will soon be announced. At five conferences last year, Continuation Committees were elected to act in an advisory capacity regarding plans for the 1918 meetings. These committees are now giving consideration to the matter of time and place, as well as suggestions for programs. Members of the Continuation Committee from New England are as follows: Dr. E. D. Merrill, Foxcroft, Me.; Dr. George Haven Clarke, Concord, N. H.; Dr. Edward J. Rogers, Pittsford, Vt.; Hon. Jonathan Godfrey, New Haven, Conn.; Miss Mary Murray, Providence, R. I.; and Dr. Arthur K. Stone, Boston.

Spanish National Medical Congress.—It is announced that the first session of the Spanish National Medical Congress will be held at Madrid from April 21 to 26, 1918, in seventeen sections, under the presidency of Dr. Ramon Y Cajal. Dr. Cajal, known for his work on the histology of the nervous system, was born in 1852, the son of a physician and professor of anatomy. After graduating from the University of Saragossa in 1873, he served for a time as an army medical officer in Cuba. He was appointed professor of anatomy at Valencia in 1881, professor of histology in Barcelona in 1886, and at Madrid in 1892.

WAR NOTES.

Public Health Administration in Russia.—Russia, with a population of 180,000,000, by far the greater part of which lives in rural districts, has developed a remarkable system of free medical care and health protection for her rural inhabitants. Up to 1864, the practice of medicine was confined chiefly to the cities. After the creation of the zemstvos by Alexander II, an effort was made to give free medical care to rural inhabitants, and by 1870 the zemstvos had arranged a system of fixed medical districts, each provided with a small hospital and a qualified physician. The number of hospitals has since then constantly increased. The tendency has been to make all hospital and dispensary work free, as the care of the sick is thought to be a natural duty rather than an act of charity. The province of Moscow has the most fully developed system, providing a hospital for every 10,000 to 15,000 inhabitants, each with two physicians, two medical assistants, and four sister nurses. Each of the larger hospitals provides a certain number of beds for general use, for communicable diseases, and maternity cases; each has its dispensary, and no charge is made for medicine or for medical care; home visits are made only in serious cases. On the preventive side, the province of Moscow is divided into thirteen sanitary districts, with medical supervisors, a central statistical division, a laboratory and a vaccine institute. There is a sanitary council for each district, and also for the whole province, with district physicians and factory physicians, all of whom are under the control of the zemstvos.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending March 2, 1918, the number of deaths reported was 345, against 299 last year, with a rate of 22.94, against 20.19 last year. There were 58 deaths under one year of age, against 56 last year.

The number of cases of principal reportable diseases was: diphtheria, 96; scarlet fever, 36; measles, 190; whooping cough, 56; typhoid fever, 1; tuberculosis, 66.

Included in the above were the following cases of non-residents: diphtheria, 14; scarlet fever, 8; measles, 3; tuberculosis, 7.

Total deaths from these diseases were: diphtheria, 5; scarlet fever, 1; measles, 2; whooping cough, 2; typhoid fever, 1; tuberculosis, 35.

Included in the above were the following non-residents: diphtheria, 2; scarlet fever, 1; typhoid fever, 1; tuberculosis, 3.

Cutter Lectures on Preventive Medicine.—The Cutter Lectures on Preventive Medicine and Hygiene for 1918 will be given by Professor E. V. McCollum, of the School of Hygiene and Public Health, Johns Hopkins University. The dates and subjects are as follows:

March 19—The Essentials of an Adequate Diet.

March 20—The Special Dietary Properties of Our Natural Foodstuffs.

March 21—The Dietary Habits of Man and Their Relation to Disease.

The lectures will be given in the Amphitheatre of Building E, Harvard Medical School, from 5 to 6 p.m.

The Massachusetts Medical Society.

MASSACHUSETTS STATE COMMITTEE, COUNCIL OF NATIONAL DEFENSE, MEDICAL SECTION.

LIST OF MASSACHUSETTS PHYSICIANS IN THE SERVICE OF THE ARMY, NAVY AND RED CROSS, COMPILED BY THE MASSACHUSETTS STATE COMMITTEE, COUNCIL OF NATIONAL DEFENSE, MEDICAL SECTION, AS OF FEBRUARY 1, 1918.

This list contains only names of men whose official acceptance of their commissions had been received previous to February 1, 1918. Names in small type are of Medical Reserve Corps, United States Army. Those in capitals and small capitals are designated as follows:

"Medical Corps"	Medical Corps, Regular Army
"National Guard"	Medical Corps, National Guard
"Navy"	Medical Corps, Navy
"Naval Reserve"	Medical Corps, Naval Reserve
"Red Cross"	Red Cross Service, Europe

*Honorably discharged † Killed in action

Any corrections will be gratefully received by the Secretary of the Committee, Dr. Walter L. Burrage, 282 Newbury Street, Boston.

Abbot, Edward S.	Waverley
Adams, Donald S.	Boston
Adams, Edward A.	Ntn. Lr. Falls
ADAMS, WINTHROP, Naval Reserve	Cambridge
Adams, Zabdiel B.	Boston
Aimone, Victor A.	Winchester
Alexander, Harry L.	Boston
Alexander, Kirke L.	Orange
Allen, Arthur W.	Boston
Allison, Carl E.	Somerville
Amiral, Hiram H.	Boston
*Anderson, John H.	Brockton
ANGELL, WORCESTER R., Naval Reserve	Brookline
APPLEBAUM, JACOB, Naval Reserve	Boston
Arnold, Horace D.	Boston

ASH, JAMES E., Medical Corps	Boston
Ash, Richard M.	West Quincy
Ashmore, Buell L.	Palmer
Aub, Joseph C.	Boston
Austin, Arthur E.	Boston
Babcock, Harold L.	Boston
Bagnall, Elmer S.	Groveland
Bailey, Charles H.	Gardner
BAILEY, KARL R., National Guard	Boston
BAILEY, WALTER C., Red Cross	Boston
Baker, Horace M.	Boston
Banquer, Jacob E.	Boston
Barnes, Frederick R.	Fall River
Barnes, Louis D.	Lanesborough
BARROW, WM. H., Medical Corps	
Bartol, Edward F. W.	Milton
Bartol, John W	Boston
Batchelder, Hollis G.	Dedham
BAXTER, CLARENCE P., Medical Corps	Topsfield
Baxter, William E.	Topsfield
Beal, Howard W.	Worcester
Bearse, Carl	Boston
Beaudet, Elphege A.	Lowell
Beaupre, Dolor I.	Holyoke
Beckley, Chester C.	Lancaster
BEDARD, J. ARMAND, Red Cross	Lynn
Beebe, Theodore C.	Boston
Begg, Alexander S.	Boston
Behrman, Roland A.	Roslindale
Belding, David L.	Boston
Bell, Richard D.	Somerville
Benoit, Samuel J.	Gardner
Berry, Gordon	Worcester
*Berry, Walter D.	Braintree
Bigelow, Edward B.	Worcester
Bigelow, George H.	Boston
Bill, Jose P.	Boston
Binney, Horace	Boston
Biondi, George C.	Framingham
Birdsall, Clarence H.	Boston
Birnie, John M.	Springfield
Bishop, Franklin L.	Boston
BLANCHARD, WM. H., National Guard	Allston
Blanchette, William H.	Fall River
Boardman, William P.	Boston
Bock, Arlie V.	Boston
BOGAN, FREDERICK L., National Guard	Boston
Bolduc, Alfred G.	Attleboro
Bonneville, A. J.	Hatfield
Boothby, Walter M.	Boston
Bostick, Warren J.	W. Springfield
Bottomley, John T.	Boston
Bowen, James F.	Amherst
Brackett, Elliot G.	Boston
Breed, Nathaniel P.	Lynn
Bressler, Charles W.	Boston
Bridgwood, David	Warren
Briggs, Lloyd V.	Boston
BRIGGS, MAURICE T., Naval Reserve	Boston
BROWN, CHESTER P., National Guard	
Brown, Percy	Boston
BROWN, ROY F., National Guard	Fall River
Browne, William E.	Boston
BRUCKSHAW, HENRY A., Naval Reserve	Fairhaven
Brunelle, Arthur L.	New Bedford
Bryant, John	Boston
BRYANT, MASON D., National Guard	Lowell
Buckley, James T.	Marlboro
Budreski, Alphonse F.	Brighton
Bull, Edward C.	Boston
BUNKER, HENRY A., JR., National Guard	Boston
Bunker, Sidney M.	Worcester
Burke, Francis R.	Quincy
Burke, George H.	Springfield
Burnham, J. Forrest	Lawrence
Burns, John E.	Natick
Burpee, Benjamin P.	Boston
Burrell, Harry C.	Medford
BURT, CLARENCE E., Medical Corps	New Bedford
Butler, Charles S.	Boston
Byrne, William R.	Framingham
Byrnes, Harry F.	Springfield
Cabot, Richard C.	Boston
Cady, Frederick B. M.	Cambridge
Cahill, Harry P.	Boston
Caines, Richard J. R.	Boston
Caldicott, Francis S.	Taunton
CAMPBELL, FRANKLIN E., Naval Reserve	Medford
Canedy, Charles F.	Greenfield
Cannon, Walter B.	Boston
Carden, Charles J.	Haverhill
Carley, Arthur W.	Ayer
Carney, Harold E.	Boston Harbor
Caro, Herman	Palmer
Carpenter, Robert J.	North Adams
Carr, Arthur W.	Bridgewater
Chadwell, Orville R.	Boston
Chagnon, Deodatus T.	Holyoke
Chambers, Ralph M.	Westboro
Chandler, Clarence L.	Fitchburg
Chandler, Harold B.	Boston
Chandler, Thomas E.	Boston
Chapin, William A. R.	Springfield
Chaput, Lucien R.	Haverhill
Chase, Frank H.	Chelsea
Chase, Heman B.	Hyannis
CHEEVER, AUSTIN W., Naval Reserve	Mattapan
Chereskin, Johnston L.	Springfield
CHISHOLM, LAWRENCE C., Naval Reserve	Salem
Chisholm, Miles D.	Westfield
Choquette, Hormidas	New Bedford
Chronquest, Alfred P.	Danvers
Claffy, John McM.	Springfield
Clark, DeWitt S.	Salem
Clark, Harry A.	Andover
CLARK, W. IRVING, Red Cross	Worcester
Clarke, Willis E.	Malden
CLIFFORD, RANDALL, Naval Reserve	New Bedford
Clute, Howard M.	Boston
Clymer, George	Boston
COATES, EDWARD A., JR., Medical Corps	Chelsea
COBB, GARDNER N., Naval Reserve	Boston
Coburn, Harry R.	Tewksbury
Cochrane, Robert C.	Boston
Coffin, Whitman K.	Provincetown
Cogswell, George P.	Cambridge
Cogswell, William	Haverhill
Cohen, Nathaniel M.	Boston
Cohen, Samuel A.	Roxbury
Collins, Joseph D.	Northampton
Collins, William J.	Northampton
Colwell, Howard S.	Worcester
COLWILL, ALBERT W., National Guard	
Conner, Homer L.	Haverhill
Connery, William L.	Springfield
CONNOR, HAROLD J., National Guard	
CONNOR, WILLIAM H., Navy	Pittsfield
Cook, James H.	Quincy
Cook, Robert J.	Boston
Cort, Parker M.	Springfield
Cosgrove, Joseph J.	Westfield
Cotting, William F.	Boston
COTTLE, GEORGE F., Navy	Edgartown
Councilman, William T.	Boston
COUPAL, JAMES F., National Guard	Boston
COURTNEY, THOMAS J., Naval Reserve	Waltham
COWLES, DWIGHT J., Naval Reserve	Ipswich
Cox, Oscar F., Jr.	Boston
Craigin, George A.	Boston
Crandall, Walter M.	Lawrence
CRANDON, LEROI G., Naval Reserve	Boston
CREMENS, JOHN F., Naval Reserve	Cambridge
Crimmin, Leo P.	Boston
Crosbie, Arthur H.	Boston
CROCKETT, EUGENE A., Red Cross	Boston
CULLEN, CHARLES A., Naval Reserve	Hyde Park
Cunha, Manuel F.	Boston

Cunningham, Richard A.	Boston
Curley, Clarence P., Naval Reserve	Provincetown
Curran, Arthur M., National Guard	North Adams
Curtin, John F.	Lawrence
Cushing, Harvey	Brookline
Cutler, Elliott C.	Boston
Cutter, Irving T.	Winchester
Dacey, Cornelius J.	Brockton
Dalrymple, Alfred T.	South Boston
Dana, Harold W.	Brookline
Danforth, Murray S.	Boston
Darling, Eugene A.	Cambridge
Davis, Charles H.	Hamilton
Davis, Ernest L.	Springfield
Davis, Frank A.	Boston
Davis, Henry L., National Guard	
Davis, Henry L.	Chelsea
*Davis, Henry L.	Lynn
Davis, Lincoln	Boston
Dennen, Ralph W.	Waltham
Denning, William E.	Worcester
Denny, George P.	Boston
Derby, George S.	Boston
DeWolf, Charles W.	Tewksbury
Diehl, Harold E.	Quincy
Dillenback, Emil U.	Springfield
Dillon, William J.	Springfield
DiMento, Vincent J.	Brighton
Dobson, Clarence H.	Conway
Dobson, William M.	Dor. Center
Dodd, Isaac S. F.	Pittsfield
Dole, Kenneth L.	Boston
Dolloff, Eugene M.	East Lynn
Dow, David C., Naval Reserve	Cambridge
Dowling, John J.	Boston
Downing, John G., Naval Reserve	Boston
Doyle, John H.	Fall River
Drury, Dana W.	Boston
Dudley, Augustus W., Naval Reserve	Cambridge
Dudley, Charles	Kingston
Dudley, Oscar A., National Guard	Saxonville
Duff, John, Jr., Navy	Boston
Duffy, Edward A.	Boston
Dunn, Joseph H., National Guard	
Dwinell, George F.	Boston
Dwyer, Wm. J., National Guard	Cambridge
Eastman, George W., Naval Reserve	Lynn
Eaton, Harold B.	Boston
Eaton, William E., Navy	Boston
Eldridge, David C., Naval Reserve	Dorchester
Eliot, Henry W.	Belchertown
Ellsworth, Samuel W.	Boston
Ely, Theodore W., National Guard	Boston
Emerson, Kendall	Worcester
Emmons, Arthur B., 2nd	Boston
Emmons, Henry M.	Jamaica Plain
Erlenbach, James H., National Guard	Dorchester
Ernst, Harold C.	Boston
Eustis, Richard S.	Boston
Evans, Robert J., Jr.	Springfield
Ewing, Edward H.	Stoughton
Favour, Richmond, Jr.	Natick
Faxon, Nathaniel W.	Stoughton
Fay, William J., National Guard	Worcester
Fellows, Albert W.	Boston
Fennelly, Daniel J.	Fall River
Fenton, Alfred A.	Norwood
Fiege, Herbert R.	Waverley
Field, Henry M.	Norwood
Fielden, John S. C., Jr., Medical Corps	Fall River
Finnerty, Charles W.	Somerville
Fiske, Eben W.	Boston
Fitts, Henry B., Navy	Provincetown
Fitts, John B.	Boston
Fitz, Reginald	Boston
Fletcher, Robert S.	Oxford
Foley, Joseph D., Medical Corps	Springfield
Forbes, Alexander, Naval Reserve	Milton
Forbes, Henry	Boston
Ford, John F.	Boston
Fornell, Carl H., Naval Reserve	Quincy
Foster, John H.	Boston
Fraim, Irving W.	Waltham
Fraser, Archibald McK.	Boston
Fraser, Somers	Boston
Fregeau, Aime N.	Fitchburg
French, Edward H.	Brighton
Frothingham, Channing, Jr.	Boston
Gage, Homer	Worcester
Gallagher, John H. C.	Chicopee
Gallagher, Nicholas A.	Malden
Ganley, A. J.	Methuen
Gardner, Howard E., Navy	Springfield
*Gardner, Leroy U.	Cambridge
Gay, William M.	Sharon
Gelineau, Joseph H.	Easthampton
Gennert, Jacob	New Bedford
George, Arial W.	Boston
George, Frank W.	Worcester
Gettings, James H.	Boston
Ghoreyeb, Albert A. W.	Boston
Gilfillan, Donald	Worcester
Gillon, Charles G. C., Naval Reserve	Taunton
Glass, James, National Guard	Framingham
Gleason, Benjamin W.	Athol
Goethals, Thomas R.	Boston
Golden, Ross, Medical Corps	Boston
Goldthwait, Joel E.	Boston
Goodall, Harry W.	Boston
Goodwin, James J.	Clinton
Gosline, Harold I.	Boston
Gould, Clarke S.	Norwood
Gould, James A.	Westboro
Goulding, Timothy F.	Boston
Grabfield, Gustave P., National Guard	Boston
Graham, James M.	Ft. Revere
Graham, Otis L., Medical Corps	Boston
Grandison, Louis J.	Charlestown
Greaney, William F.	Holyoke
Green, Hyman	Boston
Green, Milo C.	Boston
Greene, Richard C.	Northampton
Greenough, Robert B., Naval Reserve	Boston
Greenwood, Allen	Boston
Gunter, Fred C., National Guard	Boston
Guthrie, Andrew D., Naval Reserve	Medford
Gwynne, Samuel C.	Worcester
Haigh, Gilbert, Naval Reserve	Worcester
Hale, Frank S.	Brookline
Haller, David A.	Boston
Hamilton, Burton E.	Roxbury
Hamlin, William E.	Waltham
Hammond, John W., Jr., Naval Reserve	Cambridge
Handy, Harry T., Red Cross	Scituate Ctr.
Hanlon, Morgan P., Naval Reserve	Cambridge
Hannon, Daniel F.	Pittsfield
Hanscom, Ridgeley F.	Newton
Hapgood, Lyman S.	Cambridge
Hardwick, Sydney, National Guard	Quincy
Harkins, William J.	Quincy
Harmer, Torr W.	Boston
Harriman, David E.	Springfield
Harris, Carl T.	Boston
Harris, Charles E.	Hyannis
Hart, Joseph S., National Guard	Lincoln
Hartmann, Gustave	Lynn
Harvey, Samuel C.	Boston
Haskins, Abraham	Boston
Hassett, Leonard W., National Guard	Lynn
Hassman, David M.	Boston
Hatch, Ralph A.	Boston

Haywood, Ralph W.	Salem
HEFFERNAN, DAVID A., Naval Reserve	Cambridge
Henderson, George D., Jr.	Holyoke
Hiltpold, Werner	Easthampton
Hodgdon, Frank W., Jr.	Boston
Hodskins, Edward B.	Greenfield
Hodskins, Morgan B.	Palmer
Hollings, Charles Byam	Boston
Hooker, Sanford B.	Boston
HOPKINS, LAWRENCE P., Naval Reserve	Somerville
Hopkins, Ralph H.	Boston
HORNOR, ALBERT A., National Guard	Boston
Horrax, Gilbert	Boston
Horrigan, Arthur J.	Holyoke
Houston, David W., Jr.	Boston
Howard, Frederick H.	Williamstown
†Howe, George P.	Boston
*Howe, Walter C.	Boston
Hudson, Carl B.	Boston
Hughes, Edgar H.	Northampton
Hunt, Robert B.	Boston
Hussey, Earle E.	Fall River
Hyman, Clarence H.	Boston

Ilsley, Frederick R.	Medford
Irving, Frederick C.	Boston
IRWIN, GRATTON G., Navy	Greenfield

Jackson, Arthur M.	Boston
Jackson, John P.	Fall River
Jackson, Sumner W.	Boston
Janes, Arthur P.	Boston
Janes, B. Franklin	Northampton
Janney, James C.	Boston
JENKINS, THOMAS L., National Guard	Topsfield
Jennings, John G.	Auburndale
Jensen, William C.	Worcester
Jessaman, Leon W.	Framingham
Jillson, Walter A.	Westboro
Johnson, Alfred E., Jr.	Greenfield
Johnson, Erik St. J.	New Bedford
JOHNSON, HERBERT L., National Guard	Roxbury
Johnson, Leighton F.	Norwood
JOHNSON, LEWIS W., Navy	Greenfield
Johnson, Peer P.	Beverly
JOHNSTON, CLYDE C., National Guard	Springfield
JONES, FREDERICK E., National Guard	Quincy
JONES, GLENN I., Medical Corps	Ayer
Jones, Robert L.	Lowell
Jones, Thomas P.	Roxbury
Judkins, Louville M.	Boston

Kane, William V.	Lynn
Kaufmann, Samuel B.	Fall River
Keaney, Henry J.	Everett
Kearney, John H.	Fitchburg
KEEGAN, JOHN J., Naval Reserve	Boston
KEENAN, GEORGE F., National Guard	Brighton
Keenan, James A.	Boston
KELLEHER, SIMON B., National Guard	
KELLEY, ROBERT E. S., Navy	Mattapan
Kelly, John J.	Marlboro
Kemmerer, Theodore W.	Boston
KENNEDY, THOMAS J., Navy	So. Hadley
*Kepler, Charles O.	Boston
Kerr, William J.	Boston
Kewer, Leo T.	Waverley
Kilroy, Philip	Springfield
King, Edward	Boston
KING, FREDERICK A., National Guard	Boston
Kinnicutt, Roger	Worcester
Kinsley, William G.	Boston
KIRKPATRICK, GEORGE H., National Guard	Lynn
Kirkwood, Allan S.	Newton Ctr.
Kissock, Robert J.	Boston
Knowles, Edward A.	Revere
Knowles, William F.	Boston
Koefod, Hilmar O.	Boston
Kreutzmann, Henry A. R.	Boston

LADD, MAYNARD, Red Cross	Boston
LaFortune, Wilfrid T.	Fitchburg
Lally, William J.	Pittsfield
Lambert, John H.	Lowell
Lancaster, Walter B.	Boston
Lane, Clarence G.	Woburn
Lane, John W.	Boston
Lane, Walter A.	Milton
LANOIS, ESDRAS J., Naval Reserve	Northboro
Lanpher, Howard A.	Chester
LaRiviere, Evariste	New Bedford
Latham, Benoni M.	Mansfield
LAWRENCE, HOWARD F., Navy	Falmouth
Leavitt, Frank C.	Belmont
Leavitt, Peirce H.	Brockton
Ledbury, John W.	Uxbridge
Lee, Roger Irving	Cambridge
Lee, Wesley T.	Boston
Leith, Richard B.	Cambridge
Leland, George A., Jr.	Boston
Leland, Harold L.	Lowell
Lemaire, Willard W.	Worcester
Lemaire, William F.	Lynn
Lemay, Alfred M.	Brockton
LENA, HUGH F., Naval Reserve	Boston
LENTINE, GASPARE E., National Guard	
Leverton, Reuben L.	Boston
Lewis, Elisha S.	Princeton
Lewis, Frank E.	Nantucket
Light, Emmett E.	Springfield
Limauro, Louis H.	Lynn
Lincoln, George C.	Worcester
Lincoln, Merrick	Worcester
Lindsey, John H.	Fall River
Little, George T.	Uxbridge
Littlewood, Thomas	Pittsfield
Livingston, Clarence B.	Lowell
Long, Rufus W.	Boston
LORD, FREDERICK T., Red Cross	Boston
Lovesey, Burton E.	Lowell
Lovett, Robert W.	Boston
Lowe, Thomas S.	Fort Rodman
Lowney, Dennis J.	New Bedford
Lund, Fred B.	Boston
Lurier, Israel	Worcester
Lyman, Henry	Boston
Lynch, Charles F.	Springfield
LYON, JAMES A., National Guard	

MacAusland, Andrew R.	Boston
MACDONALD, FRED L., Red Cross	Waltham
MacIver, George A.	Boston
MacKnight, Richard P.	Fall River
MacKnight, William F.	Fall River
MacNaughton, Wallace F.	Boston
Macomber, Donald	West Newton
MacPherson, John D.	Boston
*Mahoney, Daniel F.	Boston
Mahoney, John F.	New Bedford
Mahoney, John L.	Boston
*Mahony, Francis R.	Lowell
MAINS, CHARLES F., National Guard	Milton
Maloney, John M.	Springfield
MALONSON, JAMES H., National Guard	
Mann, Henry L.	Boston
*Mannix, Louis E.	Chicopee Falls
Marble, Henry C.	Boston
Marlow, Searle B.	Boston
MARTIN, HARRY C., National Guard	Springfield
Martin, John F.	Boston
Marvin, Frank W.	Boston
Mason, Nathaniel R.	Boston
MATHES, ROY W., Naval Reserve	Lynn
Mathewson, Frank W.	New Bedford
*May, James V.	North Grafton
McCaffrey, Jerome J.	Attleboro
McCann, William S.	Boston
MCCARTHY, EUGENE J., National Guard	Malden
McCarthy, Louis F.	Malden

McCormick, John J.	Woburn
McCormick, William A.	New Bedford
McCrudden, Francis H.	Boston
McDonald, William J.	Brookline
McFadden, James F.	Foxboro
McGillicuddy, Cornelius J.	Boston
McGraw, Andrew J.	Taunton
McGuire, Joseph H.	Boston
McKENNA, PETER G., National Guard	Boston
McLaughlin, Arthur O.	Haverhill
McLaughlin, English N.	Newton
McLean, John A.	W. Somerville
McMahon, William T.	Pittsfield
McPherson, William E.	Canton
McQuestion, Philip	Boston
Means, James H.	Boston
Medalia, Leon S.	Boston
Medlar, Edgar M.	Boston
Meehan, Patrick J.	Lowell
Merrill, Adelbert S.	Boston
Merrill, Charles H.	Lynn
Merrill Clyde H.	Marlboro
Merrill, Everett A.	East Lynn
Merrill, William H.	Lawrence
MERRITT, EDWARD L., Naval Reserve	Fall River
Merritt, Victor S.	Springfield
MESSER, EDWARD R., Naval Reserve	Pittsfield
Metcalf, Ben Hicks	Winthrop
Miller, Percy F.	Harwich
MILLER, RICHARD H., National Guard	Boston
MILLET, JOHN A. P., Medical Corps	Boston
Millett, Frank A.	Greenfield
Milot, Wilfred F.	Attleboro
Mitchell, Frank W. A.	Lynn
Mixter, Charles G.	Boston
Mixter, Samuel J.	Boston
Mixter, William J.	Boston
Moline, Charles	Sunderland
Moncrieff, William A.	New Bedford
MONTGOMERY, JAMES B., Medical Corps	Boston
Moore, Howard	Boston
Mooring, Scott W.	Gloucester
MORAN, CHARLES L., Navy	Roxbury
Moriarty, Patrick M.	Springfield
Morris, Samuel L., Jr.	Boston
Morrison, William R.	Boston
Morriss, William S.	Fall River
Morse, Frank L.	Somerville
Morton, John J., Jr.	Boston
Mosher, Harris P.	Boston
Mossman, George	Westminster
Moulton, Starr A.	Winthrop
Munro, Donald	Milton
Murphy, James M.	Palmer
Murphy, John J.	Cambridge
Murphy, Joseph L.	Taunton
Neal, Kemp P.	Boston
*NEVERS, HARRY H., National Guard	Lawrence
Newton, Roland S.	Westboro
Newman, Leon	Jamaica Plain
Nichols, Andrew	Danvers
Nichols, Edward H.	Boston
Nichols, Nelson E.	Boston
NIELSEN, EDWIN B., National Guard	Boston
Norbury, Frank G.	Boston
Norris, Rolf C.	Methuen
Noyes, Nathaniel K.	Duxbury
Ober, Frank R.	Boston
Oberg, Frank T.	Worcester
O'BRIEN, FRANCIS E., Navy	Northampton
O'BRIEN, THOMAS J., Naval Reserve	Westboro
O'Connor, Dennis F.	Worcester
O'Connor, Patrick H.	New Bedford
O'Day, Sylvester F.	Ft. Andrews
O'Dea, Patrick J.	Attleboro
Odeneal, Thomas H.	Beverly
O'Donnell, John J.	Boston
Ohler, William R.	Boston
Olin, Harry	Roxbury
Oliver, Everard L.	Boston
O'Neil, Richard F.	Boston
Osgood, George	Cohasset
Osgood, Howard	Boston
Osgood, Robert B.	Boston
Otis, Walter J.	Waverley
Overholser, Winfred	Westboro
OWEN, ALBERT S., National Guard	Framingham
Packard, George B., Jr.	Boston
Palfrey, Francis W.	Boston
Palmer, Walter W.	Boston
Papen, George W.	East Boston
Parcher, George C.	Saugus
*Parker, Frederic, Jr.	Boston
PARKER, HAROLD F., National Guard	Boston
Parker, Raymond B.	Winthrop
Parker, Willard S.	Boston
Parkhurst, Guy McM.	Cambridge
Parlow, George G.	Fall River
Parris, Roland O.	Brookline
Partington, Cyrus B.	Fall River
Pascoe, James B.	Ft. Revere
Peabody, Charles W.	Boston
Peabody, Francis W.	Boston
Pease, Charles W.	Needham
Penhallow, Dunlap Pearce	Boston
PERCY, KARLTON G., Red Cross	Brookline
Perkins, Hamilton C.	Boston
Perkins, Roy S.	Lowell
Perry, Arthur P.	Boston
Perry, Charles E.	Northampton
Perry, Herbert B.	Northampton
Perry, Walter L.	Worcester
Peters, John D.	Gt. Barrington
Pettengill, Warren M.	Boston
Pettey, John A.	Brockton
Pfeiffer, Albert	Lexington
Phelan, Edward F.	N. Brookfield
Phillips, John C.	Wenham
*Phipps, Cadis	Boston
Pierce, Appleton H.	Leominster
PIERCE, REUEL A., National Guard	Canton
Pike, F. May	Melrose
Piper, Frank	Boston
Plouffe, Bernard L.	Webster
Plummer, Frederic H.	Chelsea
Porter, Charles T.	Boston
Powers, Harris E.	Boston
Pratt, Joseph H	Boston
Priest, Herbert B	Ayer
Provost, Raoul G.	New Bedford
Pulsifer, Nathan	Lowell
Quackenboss, Alexander	Boston
Quinn, James H.	Springfield
RAPPORT, DAVID L., National Guard	
Rattey, Arthur A.	Lawrence
Reed, Carlisle	Boston
Reese, John A.	Boston
Reid, William D.	Newton
Rice, George A.	
*Riggs, A. Fox	Stockbridge
*Riley, Augustus	Boston
Ripley, Harold W.	Boston
RISLEY, JOHN N., Naval Reserve	New Bedford
Roberts, Wyatt S.	Boston
Robertson, Oswald H.	New Bedford
Robey, William H., Jr.	Boston
Robie, Walter F.	Baldwinsville
Robinson, Henry A.	Marlboro
Rochford, Richard A.	Boston
Rockwell, J. Arnold, Jr.	Cambridge
Roderick, Charles E.	Taunton
RODGER, JAMES Y., National Guard	Lowell
RODRICK, ALBERT F., Naval Reserve	Fitchburg
Rogers, Edmund A.	Brookline
ROGERS, JOHN A., Medical Corps	Lowell
Rogers, Lester B.	Orange

Rogers, Mark H.	Boston
Rogers, Orville F., Jr.	Dorchester
Rosen, Edward	Cambridge
ROSENAU, MILTON J., Naval Reserve	Boston
Rudman, Benjamin W.	Boston
Rumage, William T.	Boston
Rumrill, Samuel D.	Springfield
RUSHFORD, EDWARD A., National Guard	Salem
Ryan, William F.	Lowell
Ryan, William P.	Holyoke
RYDER, CHARLES E., Navy	So. Boston
Salerno, Louis F.	Boston
Salmon, Charles A.	Worcester
Sanborn, Frederick R.	Lynn
SARNO, AVERY H., Naval Reserve	Boston
Savage, Joseph C.	Boston
Sawyer, Alpha R.	Boston
Sayles, Joseph B.	Taunton
Scanlon, Joseph M.	Lawrence
Scannell, David D.	Boston
Scannell, Edward J.	Chelsea
Schadt, George L.	Springfield
Schirmer, Joseph W.	Boston
SCHLEY, WILLIAM S., National Guard	Lynn
Schnack, Adolph G.	Cambridge
Schneider, Harry A.	Pittsfield
Schofield, Otho L.	Wellesley
Schofield, Roger W.	Worcester
SCOTT, NORMAN M., Medical Corps	Boston
Schwartz, George H.	East Boston
Sears, Harry E.	Beverly
SECORD, WALTER N., Naval Reserve	Newton
Segal, Joseph	Jamaica Plain
SEGAL, SAMUEL, JR., Navy	Haverhill
Sellards, Andrew W.	Boston
Sellew, Robert C.	Mill River
Senecal, Raymond E.	New Bedford
Sewall, Clarence W.	Boston
Shapira, Albert A.	Boston
SHARP, ROBERT G., Red Cross	Boston
Sharry, Charles F.	Somerville
Shaw, John H.	Plymouth
Shea, Andrew F.	Lawrence
SHEEHAN, EDWARD B., National Guard	Boston
Sheehy, William C.	New Bedford
Shepley, Luther J.	Fall River
Shields, Warren S.	Boston
Shirk, George W.	Hatfield
Shultis, Frederick C.	Leominster
Shurtleff, Percy A.	Blandford
SILVERMAN, MAX, Naval Reserve	Brockton
Simmons, Edward B.	Worcester
Simmons, Hugh L.	Worcester
Simmons, Ralph H.	Fall River
Simpson, Joseph	Essex
Sinclair, Donald B.	Williamstown
Skirball, Joseph J.	Boston
Skirball, Louis I.	Revere
SLEEPER, FRANK W., Naval Reserve	Dorchester
Small, Albert E.	Melrose
Smith, Edwin E.	Quincy
Smith, Erdix T.	Springfield
Smith, John J. H.	Cambridge
Snow, Frank W.	Newburyport
Solomon, Sidney J.	Revere
Souter, William N.	Boston
Souther, Robert F.	Boston
Spellman, Martin H.	Whitman
Spencer, Oscar L.	Lynn
Spooner, Lesley H.	Boston
Spruit, Charles B.	Boston
Staatz, Karl S.	Worcester
*Stack, John J	Boston
Stansfield, Clarence W.	Fall River
Stapleton, Willard Pierce	Worcester
St. Clair, Austin E.	Boston
STEARNS, ALBERT F., Naval Reserve	Billerica
STERN, NEWTON S., Medical Corps	Jamaica Plain
Stetson, Frank E.	New Bedford
Stevens, Franklin A.	Boston
STEVENS, HORACE P., Naval Reserve	Cambridge
Stick, Henry L.	Baldwinsville
Stickney, Whitney G.	Beverly
Stoddard, James K.	Boston
Stoddard, James L.	Boston
Stoddard, Mortimer J.	Springfield
Stone, James S.	Boston
STOWE, IRVING E., Naval Reserve	Brookline
Strahlmann, Louis	Boston
Streeter, Edward C.	Boston
Streeter, John F.	Springfield
Strong, Richard P.	Boston
Sturgis, Walter H.	Allerton
Sullivan, Daniel J.	Boston
Sullivan, John A.	Pittsfield
Sumner, Harry H.	Lowell
SURLS, JOSEPH K., National Guard	
Sussler, David	Dorchester
Sweeney, John G.	N. Cohasset
Sweeney, Michael T.	Atlantic
Tate, Harry J.	Pittsfield
Taylor, John H.	Cambridge
Teague, Oscar	Boston
TENNEY, WM. N., National Guard	Canton
Thaxter, Langdon T.	Boston
Thom, Douglas A.	Worcester
Thomas, Arthur W.	Boston
Thomas, Elmer E.	Northampton
Thomas, Henry M.	Boston
Thomas, John J.	Boston
Thomes, John B.	Pittsfield
Tierney, Thomas F.	Hudson
Tobey, Harold G.	Boston
Towne, Edward B.	Boston
Tracy, John M.	Springfield
Trask, John W.	Lynn
Treichler, Albert J.	Springfield
Truesdale, Philemon E.	Fall River
Tucker, Cassell C.	Boston
Tucker, Willis L.	Hinsdale
TULLY, GEORGE L., Naval Reserve	Roxbury
Tully, George W.	Southbridge
Turner, William K.	New Bedford
Tuttle, Howard R.	South Acton
Ullian, Louis J.,	Boston
Underwood, George B.	Gardner
Upton, Charles L.	Shelburne Fls.
Van Gorder, George W.	Brookline
VAN METER, ABRAM L., Medical Corps	Boston
Vaughan, Warren T.	Boston
Viets, Henry R.	Boston
Vincent, Beth	Boston
WALCOTT, WM. W., National Guard	Natick
Walker, Melvin H.	Pittsfield
WALSH, JAMES J., National Guard	Lexington
Ward, Edward S.	N. Attleboro
Warden, Ralph A.	Boston
Warren, John	Boston
Washburn, Frederic A.	Boston
WATERHOUSE, ROBERT M., Navy	Newton
Watkins, Harvey M.	Palmer
Watt, Charles H.	Fall River
Wearn, Joseph T.	Boston
Webber, Wolfert G.	Boston
Webster, John B.	New Bedford
Weiser, Walter R.	Springfield
WELBOURN, MARSHALL A., National Guard	Boston
WESSELHOEFT, CONRAD, National Guard	Boston
Wesselhoeft, William F.	Boston
Wheat, Harry R.	Springfield
Wheatley, Frank E.	N. Abington
Whelan, Charles	Hingham
WHELAN, EDMUND V., Naval Reserve	Bridgewater
WHIPPLE, GEORGE C., Red Cross	Cambridge

WHITCOMB, CLARENCE A., Naval Reserve	Malden
White, George A.	Cambridge
WHITE, JOHN R., Navy	Lynn
WHITE, JOSEPH W., Navy	Boston
White, Paul D.	Boston
Wiggin, Ralph C.	Boston
WIGGIN, WILLIAM I., Red Cross	Lowell
Wilbur, George	Boston
Wilhoit, Sterling E.	Boston
WILLIAMS, FRANK P., National Guard	Boston
Wilson, Charles H.	Chelsea
Winslow, Edward S.	Easthampton
Wislocki, George B.	Boston
WITHINGTON, ALFREDA B., Red Cross	Pittsfield
Withington, Paul	Boston
Withington, Paul Richmond	Boston
Wood, William F.	Boston
Woodard, James M.	Salem
Woods, Alan C.	Boston
WOODWARD, LEROY A., Naval Reserve	Worcester
Woodworth, John D. R.	Boston
Wright, Charles W.	Lanesborough
*Wright, James H.	Boston
Wright, Wade S.	Boston
Wyant, John	Boston
Wyman, Edwin T.	Boston
Wyman, John H.	Medway
Yeamans, Herbert W.	Warren
Yoosuf, Abraham K.	Worcester

MASSACHUSETTS PHYSICIANS IN THE BRITISH SERVICE.

This is not an official list, and is necessarily incomplete. The committee would be glad to receive additions and corrections.

Bridges, Stanley	Worcester
Cabot, Hugh	Boston
Crabtree, Ernest G.	Boston
Jouett, Fred R.	Cambridge
MacKay, William H.	Worcester
Raymond, Albert C.	Worcester
Shattuck, George C.	Boston
Shepard, William G.	Lynn
Stansfield, Oliver	Worcester

Obituary.

JAMES OLIVER, M.D.

DR. JAMES OLIVER, one of the most honored and well-known citizens of Athol, his native town, died recently at his home in Athol Highlands, at the age of 81 years.

Dr. Oliver had for many years been a leader in Athol affairs, and was for well over half a century a practising physician in that town. Some years ago he retired to enjoy his later years in the political field. He represented the district in which he lived for four years in the House. In both military and health affairs he took an active part, serving as chairman of military and health committees.

Dr. Oliver was the third of the same name to be born in Athol, and was the only son of James Oliver. He was born June 28, 1836. When he was seventeen he taught school at a salary of $14 a month. Later he taught in North Orange and Phillipston and at intervals attended the local high school. He also taught in both the Athol Grammar and High Schools.

In 1860 he began the study of medicine with the late Dr. J. P. Lynde, finally becoming a practising physician in 1862. At the outbreak of the Civil War he was commissioned an assistant surgeon in the 21st Regiment. His record in the war was notable and honorable. At the second battle of Bull Run he was left in charge of the sick and wounded, was taken prisoner, but later managed to escape. He participated in the great battles of South Mountain and Antietam, and was later promoted to be surgeon of the 21st Regiment, on May 26, 1864. He went through many battles and was finally mustered out on July 30, 1865.

After a residence of a few years in South Carolina, where he engaged in planting and cotton raising, Dr. Oliver returned to Athol, where he resumed his medical practice. He was much interested in the social affairs of his town, the G. A. R., the Grange, the schools and town business generally. He was a prominent figure in town meetings where he showed much strong common sense. In debate he was an able speaker and could hold his own with the best speakers in Athol and in the State Legislature. He was a member of the Athol Lodge of Masons and a leader in the old First Unitarian Church.

During his life he held several town offices, being for a long period of time a member of the school board, and for many years medical examiner of his district. For about twenty years he was chairman of the Cemetery Commission of Athol, and rendered most valuable service.

In 1876 he married Miss Kate Johnson, daughter of the late George T. Johnson. Mrs. Oliver died some years ago. They had two children, Mrs. Annie J. Kendrick, who survives her father, and the late James Oliver, an only son, who died some years ago.

In 1916 Dr. Oliver published his autobiography, a book of 150 pages, in which he gives the history of the Oliver family from the date of the first settlement in Athol of the four brothers, John, James, Robert and William Oliver, who came to Athol from Hatfield in 1735. This autobiography is a most interesting and entertaining work, full of sketches of the life in Athol, anecdotes, stories, and accounts of events occurring before and during the Doctor's life. The book gives an account of the author's own life, his early trials amid straitened circumstances, his schooling, teaching, medical training. His story of his experiences in the Civil War is full of interest. In his capacity of surgeon of the 21st Regiment, he was most valuable to the Government and later received many testimonials in recognition of his services. Many of the Doctor's addresses before the Legislature are also comprised in this book, including those on health and military matters.

Personally, Dr. Oliver, often called Athol's grand old man, was delightful to meet and know. He was a great favorite in the Legislature, and was there held in great esteem both for his interesting conversation and pleasing personality. Absolutely honorable and unselfish, he was held in universal esteem and veneration.

Miscellany.

MEMORIAL TO DR. CUTTS.

The following memorial to Dr. Cutts was read and adopted at a meeting of the Brookline Medical Club on February 28, 1918:

"In the death of Harry Madison Cutts, a former President, the Brookline Medical Club has suffered a loss which it will be impossible to fill. It was chiefly through his efforts that the Club came into existence, and his interest in its welfare had been most keen. Always ready to do more than his share of work, he contributed much to the success of the Club. He helped in a large measure to unite the medical profession of Brookline and to develop a spirit of coöperation and good fellowship. The good ethical tone of medical practice in Brookline and the pleasant relations which exist between members of the profession are due in great part to the influence of Harry Cutts. The conscientiousness which characterized all his work, whether for his patients or the community, showed itself in the service which he gave to his country up to the last week of his life.

Resolved, That the deepest sympathy be expressed to his family in their great loss.

Resolved, That a copy of the above be entered in our records, sent to his family, and published in the local papers.

B. S. Blanchard,
G. H. Francis,
F. P. Denny,
Committee."

NOTICE OF COMPETITIVE EXAMINATION FOR QUALIFICATION ON THE ELIGIBLE LIST OF CANDIDATES FOR POSITIONS AS STATE DISTRICT HEALTH OFFICERS AND EPIDEMIOLOGIST IN THE MASSACHUSETTS STATE DEPARTMENT OF HEALTH.

Although the law leaves the appointment of District Health Officers and the Epidemiologist in the hands of the Commissioner of Health, it is the policy of the State Department of Health to hold competitive examinations as the principal basis for selecting appointees.

On April 1st and 2nd, 1918, and on subsequent dates to be announced at that time, an examination will be held for the purpose of establishing an eligible list of appointments to positions as State District Health Officers and Epidemiologist of the Massachusetts State Department of Health.

The written examination will be held on the above dates in the examination room of the Civil Service Commission, No. 15 State House, Boston. The oral and practical examinations will be held on dates and at places announced at the time of the written examination.

In the immediate future there will be one appointment to the position of State District Health Officer and one to the position of Epidemiologist.

Persons possessing the necessary qualifications and desiring to enter the competitive examination of this service are requested to communicate with the State Commissioner of Health, State House, Boston, at once. Upon such written application, a list of rules and regulations governing the appointment and promotion of District Health Officers and Epidemiologist and an application blank will be sent.

Admission to the examination is governed by these regulations. Physical fitness is a necessary prerequisite, but no percentage credits are given on physique. The examination comprises written, oral and, if feasible, practical tests.

Relative rating on the eligible list is established on the basis of:

(*a*) Previous experience in public health work, both administrative and scientific —maximum 25 points.

(*b*) Results of oral examination—maximum 25 points.

(*c*) Results of written examination—maximum 50 points.

A. J. McLaughlin,
March 8, 1918. *Commissioner of Health.*

STATE DEPARTMENT OF HEALTH OF MASSACHUSETTS.

REGULATIONS GOVERNING APPOINTMENT OF STATE DISTRICT HEALTH OFFICERS AND EPIDEMIOLOGIST.

Grades. (1) There shall be four grades, viz: A, B, C and D.

Officers appointed only to Grade D. (2) Candidates for these positions, after passing a successful examination, shall be eligible for appointment to Grade D.

Form of application for appointment. (3) Candidates must make application addressed to the Commissioner of Health in their own handwriting, asking permission to appear before a Board of Examiners. Candidates shall state their age, date and place of birth, present legal residence, names of colleges or institutions of learning of which they are graduates, date of graduation, and shall furnish testimonials as to their professional experience and moral character.

Age Limit. (4) No candidate will be eligible to appear before a Board of Examiners whose age is less than twenty-three years or more than forty years. Candidates over thirty-five must have had at least three years' practical experience in public health work.

Professional Requirements. (5) Candidates shall be graduates of an incorporated medical school, or shall have had at least five years' experience in public health work and sanitary science.

Citizenship. (6) All candidates must be citizens of the United States, and preference in appointment shall be given to residents of Massachusetts.

Physical Examination. (7) Candidates for appointment must pass a satisfactory physical examination before a Board of Examiners.

Board of Examiners. (8) The Board of Examiners shall consist of three or more members. These members shall be selected by the Commissioner of Health from the Public Health Council or other officials of the State Department of Health.

Scope of Examination. (9) All examinations of candidates shall be conducted by a Board of Examiners, and the examination shall include a physical examination and such oral, written and practical tests as the Board deems necessary in the subjects outlined in the succeeding sections. Experience and fitness shall also be rated by the Board of Examiners.

Subjects for Written Examination. (10) All candidates for appointment must pass a satisfactory written examination in Communicable Diseases, Hygiene and Sanitation, Preventive Medicine, Vital Statistics, Pathology and Bacteriology.

Compensation. (11) The compensation of District Health Officers and Epidemiologist shall be as follows:—

Grade A	$3500.00
Grade B	3000.00
Grade C	2500.00
Grade D	2000.00

When Promoted. (12) After six months' satisfactory service in Grade D, an officer is entitled to promotion to grade C. After three years' satisfactory service in Grade C, an officer is entitled to examination for promotion to Grade B. After five years' satisfactory service in Grade B, an officer is entitled to examination for promotion to Grade A.

Examinations for Promotion. (13) Examinations for promotion shall be conducted by a Board of Examiners, who shall take into account the efficiency record of the candidate as well as his professional and physical fitness. Failing first examination an officer may be given a second examination after one year. Failing two successive examinations, such an officer shall be dropped from the rolls.

Tenure of Office. (14) A District Health Officer or an Epidemiologist may be removed from office by the Commissioner of Health because of failure to pass two successive examinations for promotion, or because of gross misconduct or inefficiency, but only after the accused officer has been furnished with a copy of the charges made against him and given a hearing thereon by the Public Health Council.

Note. In view of war conditions, the maximum age limit will not be strictly adhered to in candidates whose other qualifications are exceptional. No candidate of military age will be considered unless he can convince the Board of Examiners that he is to be exempted from military service, either on grounds of dependency or on physical disability. In regard to the latter cause for exemption from military service, he should bear in mind the physical requirements for the position he is seeking, and that many causes for rejection from the service would operate here.

SOCIETY NOTICES.

Suffolk District Medical Society.—A meeting of the Medical Section will be held on Wednesday evening, March 20, 1918, at the Boston Medical Library, at 8.15 P.M.

James Alexander Miller, M.D., who was one of a commission sent to France last summer by the Rockefeller Foundation to study the problem of tuberculosis; will speak on "Social and Health Conditions among the Civilian Population of France."

Light refreshments after the meeting.

Gilbert Smith, *Secretary.*

Worcester District Medical Society.—The regular meeting will be held Wednesday, March 13 , at 4.15 P.M., in G. A. R. Hall, 55 Pearl Street, Worcester.

Paper—"Some Surgically Remediable Gastro-Intestinal Diseases," by Dr. Michael F. Fallon, Worcester. The paper will be illustrated by lantern slides.

Dr. A. W. Marsh will report progress on the plans for Medical Mobilization in case of a great local disaster.

Ernest L. Hunt, *Secretary.*

RECENT DEATHS.

Sallie Justina Ermentrout, M.D., a former practitioner in Boston, died at Eldridge, California, of lobar pneumonia, November 14, 1917, aged 60 years. She was born in Reading, Pa., May 18, 1857, graduated at the Woman's Medical College of Pennsylvania, Philadelphia, in 1891, and settled in Boston, joining the Massachusetts Medical Society in 1893. She moved to California in 1913.

John George Blake, M.D., died at his home in Boston, March 4, 1918, aged 80 years.

The Boston Medical and Surgical Journal

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Address.

THE VALUE OF THE PHYSICIAN AND OF THE NURSE IN SOCIAL SERVICE WORK IN TUBERCULOSIS; THE RESPONSIBILITY OF EACH TO THE STATE AND TO THE PATIENT.*

By John B. Hawes, 2d, M.D., Boston,

Secretary of the Trustees of Hospitals for Consumptives; Director Tuberculosis Clinic, Massachusetts General Hospital.

Two very distinct subjects have been given me to discuss, and there is much that might be said concerning each of them.

I may well introduce what I have to say concerning the responsibility of the nurse and of the physician to the state and to the patient with these statements, in each of which I am a sincere believer:

1. Every tuberculous patient, as far as it is possible, should, at some time, have sanatorium treatment, but:

2. The patient's sojourn in a sanatorium should be looked upon as an incident of great, or less, importance in a course of treatment, the most important parts of which come before his entrance and after his departure from the sanatorium.

3. The responsibility of physician and nurse does not end when the patient is admitted to a sanatorium or hospital.

At present the tuberculosis sanatorium or hospital is one of the most important, and certainly the most striking, factor in our campaign against consumption; as time goes on, however, I believe that the part played by institutions will be a smaller and smaller one, while that of physician and nurse, in private or public capacity, will become of increasing importance. We have reached the point, in Massachusetts at least, when we realize that the patient's stay in a sanatorium is only a means to an end and that the period before he enters the sanatorium, and after he is discharged, is equal in importance, as far as his own welfare is concerned, to that spent in the institution itself. The physician, and particularly the nurse, may be of inestimable service in covering these two periods, before and after the patient undergoes institutional treatment. The responsibility of the medical profession goes further than merely making the diagnosis of tuberculosis and getting the patient into a sanatorium. We are far too apt to feel that our duty is done, and well done, as soon as we get our patients into Rutland, for instance. We do not always realize that we have a responsibility toward the patient's family, toward the public at large, and that our responsibility toward the patient continues after he leaves the institution.

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* Presented before the Framingham Medical Club and Community Health Station, January 31, 1918.

In an idealized plan for controlling tuberculosis, the following factors should play important parts:

1. The elimination of sources of infection, both human and bovine.
2. The education of the public, and particularly of children, in methods of right living and proper hygiene.
3. The early diagnosis of clinical tuberculous disease in adults and children.
4. Sanatorium treatment for the education and care of favorable and suitable cases.
5. Hospital treatment for the care and isolation of advanced, progressive cases.
6. Supervision of the tuberculous patient before and after leaving an institution, and at all times if the patient does not, or cannot, have institutional care.

I shall take up these various points briefly and will try to point out in as practical a way as I can where the nurse, and through her, social service,—or as I prefer to call it, "applied common sense,"—can do the most good, and, where the physician's responsibility lies.

THE ELIMINATION OF SOURCES OF INFECTION, BOTH HUMAN AND BOVINE.

As far as bovine sources of infection are concerned, this is largely a state or administrative problem. In all cases where there is any question as to the cleanliness of the milk supply the physician might well advise pasteurizing the milk, and the nurse can give instructions as to how best to do this.

The elimination of human sources is a far more difficult task. Could we bring this about, our tuberculosis problem would be easily and quickly solved. This, likewise, is largely a state and administrative problem, yet the nurse and the physician have a very definite responsibility in doing their share to eliminate such sources. Although theoretically, we all believe that it should be done. I wonder how many of us physicians insist emphatically that when we make a diagnosis of tuberculosis in one member of the family that every other member of the family should be carefully examined. I feel very sure that this procedure is not carried out anywhere near as often as it should be. Among the poorer classes, particularly in school work, the nurse can arrange this more easily than the doctor. As often happens in medicine, the poor classes and the rich classes get the best treatment. It is the patients who come to our own offices, who are unwilling to go to a big public clinic, and who pay us a moderate fee, who often get the poorest treatment. Personally, I find it very hard to ask a man with active tuberculosis, who has come to me for advice, and who has cheerfully paid my bill, although I know that he is in very moderate circumstances, to bring in his wife and children for examination, at what he knows will be an additional expense; and yet I feel that it would be a good investment on his part.

How many elderly persons are there with so-called "New England winter coughs" who have coughed and raised profusely for many years and yet maintained very good health in spite of it, who, on close examination, will be found to have chronic phthisis, and who thus explain the cases of consumption among the younger members of the family? In my own practice, I can name a good many instances where tragedies of this sort have occurred because of neglect on the part of the physician to inquire into such sources of infection. Are we sufficiently strict about not allowing a consumptive father or mother to live at home without the training that a stay, even a short stay, in a properly run sanatorium gives? Personally, I do not think that we are. It has often been said that the intelligent consumptive is no more a source of danger to those about him than a man with a wooden leg. I do not feel so sure of this as I used to, and the more I see of tuberculosis work, the more firmly I believe that every consumptive, whenever possible, should undergo sanatorium treatment, if only for a short period. Dr. Joseph H. Pratt and Dr. Nathaniel K. Wood, of Boston, have both done excellent work in showing us what home treatment really means. Indeed, I have been most intimately connected with this work myself, and before our present sanatorium system was developed in Massachusetts have urged this method of treatment in almost every city in the state. In my experience in the State House during the past ten years, where we deal with the tuberculosis problem as a whole, and not with individual patients, I do not now feel that home treatment ever can, or should, take the place of sanatorium treatment among the poorer classes if the sanatorium is in any way available.

So, here, in the elimination of human sources of infection, the nurse and the physician have a very definite responsibility and can accomplish much good.

THE EDUCATION OF THE PUBLIC AND PARTICULARLY OF CHILDREN IN METHODS OF RIGHT LIVING AND PROPER HYGIENE.

Seven or eight years ago I was instrumental in having passed through the legislature an act (Chap. 181, Acts of 1908) which demanded that tuberculosis, its cause and prevention, be taught in the grades of our public schools in which the subjects of hygiene and physiology are taught. I also helped to construct some school tuberculosis exhibits to show in a striking and graphic way the general subject of right living as applied, not only to tuberculosis, but to health and disease in general. I well remember the words of an eminent physician who was much opposed to such legislation as this and who felt that children should not know anything about such subjects. I could not agree with him then nor can I now. I believe that there is no more important subject taught in our schools than the elementary principles of hygiene. I should like to see the three R's, reading, writing, and arithmetic, sacrificed in order to hammer into the heads of our school children the question of the proper care of their bodies and good habits in regard to the care of the teeth, bathing, eating, sleeping, exercise, fresh air, etc.

Again, among the poorer classes, at least, such work as this does not so much involve the private practitioner and the nurse. Nevertheless, the physician has a very definite responsibility in instructing the parents of the children with whom he comes into contact and the children themselves concerning such matters, whereas the opportunity for the nurse to do good in this direction is almost unlimited.

THE EARLY DIAGNOSIS OF CLINICAL TUBERCULOUS DISEASES IN ADULTS AND CHILDREN.

This is a subject in which sanity and common sense is very much needed in Massachusetts.

One must make a distinction between tuberculous infection, which most of us have, and tuberculous disease which most of us have not. It is not the nurse's duty to make the diagnosis of consumption, but it is her duty to be able to recognize the danger signals and to teach mothers, fathers, and children concerning them, and to bring them to the attention of the family or the school physician. We physicians must constantly bear in mind the responsibility we are assuming when we state that any given patient has or has not pulmonary tuberculosis. We must remember the value of constitutional signs and symptoms, fever, loss of weight and strength, etc., as compared with localized signs in the lungs. We must realize that absence of proof is not proof of absence, and that because we cannot find striking abnormalities in the lungs it does not follow that the patient who has lost weight and strength and who is running a slight fever is free from active tuberculous disease.

In my own work I am coming in contact with two extremes in the diagnosis of tuberculosis. The younger men in our large cities are, apparently, eager to find evidence of tuberculosis and are occasionally finding such where none exists. At the Massachusetts General Hospital I am constantly unmaking diagnoses of consumption and trying, not always successfully, to undo the harm which has been done by over-enthusiasm in this regard. On the other hand, in the country districts at a distance from the large medical centres, there are still far, far too many physicians who do not know how to recognize incipient pulmonary tuberculosis and who are carrying the patient along under such vague and misleading terms as weak lungs, a spot on the lungs, chronic bronchitis, anemia, debility, and others. I believe that the diagnostic standards drawn up for the use of the Framingham Experiment will be of great value, and merit earnest study, on the part of every physician.

SANATORIUM TREATMENT FOR THE EDUCATION AND CARE OF FAVORABLE AND SUITABLE CASES.

The physicians of Massachusetts are not responsible for the management of our state sanatoria. That responsibility rests on a board of trustees and the Commonwealth of Massachusetts, but the responsibility of making effective the treatment which our sanatoria are offering and of making the investment that the State of Massachusetts is putting into these institutions a good investment does rest very largely with the medical profession of Massachusetts. I do not believe that we sufficiently realize this responsibility. I do not believe that the average physician knows as much as he ought to know concerning the place to which he is sending his patients. I doubt if he reads at all carefully the detailed circulars of information which are sent out to every physician in the state from time to time, and I am sure that the percentage of physicians who have ever visited a tuberculosis sanatorium of any kind whatsoever is an extremely small one. At the largest medical school in Massachusetts young men are graduated every year and given the degree of Doctor of Medicine with practically no knowledge of what our tuberculosis problem is and what Massachusetts offers in the way of sanatorium treatment.

I believe that we, as physicians, ought to have a very definite knowledge concerning such matters, and that before we advise any of our patients to go to a state sanatorium or, as not infrequently happens, advise them *not* to go to a state sanatorium, that we should know in considerable detail where the patient is going, what he will receive in the way of treatment, what he can expect in the way of improvement, and what such improvement depends upon. Far too many patients are entering our state institutions with an attitude partly, at least, instilled by their physicians, "Here I am. Now feed me and cure me." Many of the difficulties that our superintendents meet in persuading our patients to take proper treatment would be done away with were every patient given a frank, plain, common sense, and, if necessary, severe talk, to show him that the successful outcome of his case depended far more upon the amount and quality of his brains than upon the amount of diseased tissue in his lungs. There is a tremendous opportunity for physicians and nurses to do good in this direction.

At the State House, at the Massachusetts General Hospital, and in my own private work, I am constantly meeting patients who have come back from a sanatorium with apparently little or no idea as to why they really went there, and what they should have learned. This is not altogether the fault of our sanatoria. I fully realize that at Rutland, for instance, four physicians, one of whom is engaged almost entirely in administrative work, cannot go into much detail with 350 patients, and that until there are either more physicians or fewer patients, the state of affairs will not be altogether satisfactory. But we physicians who send our patients to Rutland, to North Reading, and elsewhere, can be of great service in helping to make this problem a less difficult one by giving our patients some common sense ideas as to what they must do to get well, and by reminding them that their getting well depends largely on themselves.

HOSPITAL TREATMENT FOR THE CARE AND ISOLATION OF ADVANCED, PROGRESSIVE CASES.

It is not a pleasant task to advise any patient to go to a tuberculosis hospital when we know, and the patient knows, that in all probability the outcome of his case is going to be anything but a favorable one. I do not see how a hospital for advanced, progressive, and dying cases of consumption can be anything but more or less unpopular, and yet such hospitals play a most important part in our tuberculosis scheme. The medical profession and the nursing profession should do more than they are now doing to make these institutions effective, to get into them the patients who should go there, and to see that they are made as attractive as it is possible to make them. If there is anything really at fault with such a hospital, so that it deserves its unpopularity, pitiless publicity should be exercised until the fault is remedied by those in a position to remedy it. I do not think for a minute that we are going to accomplish much-needed changes in many of our local tuberculosis hospitals by simply refusing to send our patients there, by advising them not to go, by saying that they are nothing but death houses or morgues, or by using similar language the echoes of which constantly reach me at the office of our trustees at the State House. The waiting list for our state sanatoria is a distressingly long one. A patient must wait at least two months, and at present a longer time, before he can possibly be admitted to any one of them, while at Westfield there is nearly a six months' interval between the filing of the patient's application and his final admission. Yet there are many physicians, and, I am afraid, nurses also, who are advising their patients not to go to this or that local tuberculosis hospital where they can get under cover and wait comfortably until they can enter a state sanatorium.

I, personally, am acting under the strictest injunctions from the board of which I am secretary, not to admit far advanced, progressive, and unfavorable cases to our sanatoria. I am constantly meeting such patients, however, who positively refuse to occupy a bed available for them in some local tuberculosis hospital and who are led to believe by their physicians that they can eventually gain admittance to a state sanatorium. It is not a pleasant task to have to tell such patients the truth.

SUPERVISION OF THE TUBERCULOUS PATIENT BEFORE AND AFTER LEAVING AN INSTITUTION, AND AT ALL TIMES IF THE PATIENT DOES NOT OR CANNOT HAVE INSTITUTIONAL CARE.

Energy and common sense in this direction, will do untold good. The work that our after-care nurse, Miss Bernice Billings, has done during the past five or six years shows what one woman can do. The plan of the State Department of Health to provide a number of nurses whose duty it is to be to look after discharged sanatorium patients and all other patients who do not go to an institution, with Miss Billings at the head of such a corps of nurses, will, I firmly believe, do more to decrease our tuberculosis death rate, and to make our anti-tuberculous efforts effective, than any one thing the State of Massachusetts has done for years. But every physician, and every nurse, should bear in mind that unless Miss Billings, and the corps of nurses under her supervision, have the earnest and hearty coöperation of the medical and nursing profession, their efforts will be more or less unavailing. With at least 10,000 consumptives in Massachusetts who are in need of active and aggressive treatment,—and this I believe to be a conservative estimate,—it is evident that no one woman, directing the work of a dozen or so nurses, can do very much; but if a plan can be brought into operation whereby Miss Billings and each one of her nurses are in active and close coöperation with nurses, physicians, dispensaries, tuberculosis associations, boards of health, and private physicians throughout the state, then we will accomplish something.

I hope, before long, to see the proper machinery in operation whereby, whenever the diagnosis of pulmonary tuberculosis is made in the case of any man, woman, or child in this state, certain things will be done, including the examination of the other members of the family, proper supervision of the patient himself until he can go to a sanatorium or hospital, adequate care of the other members of the family, if the bread-winner is removed, and finally, steps taken so that when the patient leaves the sanatorium or hospital he will return to proper home conditions, to work suited to his needs, and that at all times he will be under proper supervision, whether he likes it or not. This happy state of affairs will result only if we, as physicians or nurses in our private capacity, will realize the need of it, and will do our share to help, and realize and assume our responsibilities to the state and to the patient, some of which I have here outlined.

Original Articles.

SPONTANEOUS PNEUMOTHORAX.*

By Philip H. Pierson, M.D., San Francisco.

This term, "spontaneous pneumothorax," has been used in the literature to refer to cases of natural pneumothorax in persons with no demonstrable lung disease and, conseqeuntly, in apparently good health. It is also called by some, "idiopathic pneumothorax," "latent pneumothorax," "pneumothorax with insidious onset," "pneumothorax silencieux," as well as other terms indicating a non-tuberculous etiology.

Up to 1902, Russell and Riessman had been able to collect only 56 cases from the literature, and in 1912 Nickolsky reported 90 cases, which included the 56 above mentioned. From this it can be seen that the condition is not a common one, although it may be more often present than recognized. In healthy individuals its onset may be so insidious and the signs, where there is only a partial collapse, so vague that without urgent symptoms the condition may be easily overlooked in hurried examinations of the chest. Among others more recently, Hewlett and Hamman have each reported four cases and Perry one. The cases, as well as their outcome, are so similar that certain points as to etiology, symptomatology and prognosis can be considered collectively.

Zahn, in 1891, published the first thorough study of the causes for pleural rupture where there was no inflammatory process discernible, and describes four different modes:

(1) The rupture of vesicular blebs. These may be as large as hens' eggs, and are found in pulmonary emphysema. Because of the occurrence of pneumothorax in the comparatively young, where emphysema does not usually exist, we must conclude that it does exist in small portions of some apparently healthy lungs without giving any symptoms;

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* Read before San Francisco County Medical Society, September 4, 1917.

(2) The rupture of interstitial emphysema blebs, in which the air enters the interstitial tissue and then reaches the pleural surface, where vesicles form and rupture. All such instances have been about pleural adhesions, which are probably the cause of such a condition;

(3) Direct tear of pleura by the tug on adhesions; and

(4) Senile atrophy of pleura. This is so uncommon that it may be disregarded, and (1) and (2) may be combined under the term of vesicular emphysematous blebs.

The tearing of a pleural adhesion is the most probable cause for the rupture and, if we consider this pleural involvement possibly the primary focus of a tuberculous process in the lung, as Gohn would have us believe, where there is no other discernible evidence of tuberculosis, then more of these cases really may be due to tuberculosis than is believed. If the original tuberculous infection was in the pleura, and became entirely healed at that point without draining into and involving the bronchial glands, the physical signs would be so small that they could not be detected, and the area might be so minute that it would not appear in the x-ray. In tuberculosis, where the condition of pneumothorax occurs in about 1% of the cases, the rupture can be explained by a diseased condition near the periphery of the lung, where possibly there are adhesions and, when just the right amount of pressure is put upon this area, there is a rupture.

Next, may we consider the events generally just preceding the pneumothorax in apparently healthy individuals? It more often occurs after strenuous exertion, such as a hard day's work, or occasionally after a sneeze, hard cough, or sudden deep inspiration, which might follow the shock of a cold shower bath. Several of the cases in the literature have occurred during sleep. In one of the cases, which I will speak of later, that of a new-born babe, the pneumothorax was produced by the initial cry; in another, a boy of four years, it had a very gradual onset before admission to the hospital. In a patient with pneumonoconiosis it followed a hard day's work.

When the lung suddenly collapses there is naturally always dyspnea, which becomes marked on exertion. There is somewhat more rapid pulse, and varying degrees of shock in the severe cases. If the patient is put to bed and given absolute rest, most of these symptoms subside in one, three or four days. On physical examination, the affected side is generally slightly enlarged, due to the increased intrathoracic pressure. If the collapse is only partial, this may not be evident. As is frequently the case, the collapse is not complete, and it occurs gradually. This can be explained by the fact that the tear is only a small one and, as the lung decreases in size, the aperture closes of itself. It is not uncommon to find a dulness, spoken of as "wooden," over the affected side, although tympany would be expected. This dulness is probably due to the compression of the air in the pleural cavity. There is always diminished breathing over a part or the whole of this chest, with some exaggeration on the opposite side. The heart may or may not be displaced; it most often is, especially where there is any considerable amount of air. It is not always possible to hear a coin sound, or the so-called metallic tinkles, which are caused by bubbles of air in the compressed pocket of air (pneumothorax). There is generally hyper-resonance, or dulness, to a lower level on the affected side, and it does not move with respiration. The history of sudden dyspnea, or its gradual onset within a few hours, in an apparently healthy person, who shows either a wooden tympany or hyper-resonance over one chest, with diminished or absent breath sounds, should be sufficient to make the diagnosis of pneumothorax. From the physical signs fluid might be suspected, but the symptoms are not those of fluid.

The treatment for this condition is absolute rest, and this is generally sufficient. If the symptoms are severe, aspiration may be tried, but not until after a day or two, when the rent in the visceral pleura shall have healed. In most of these cases the air is fairly rapidly absorbed, and they are apparently in good health in four to eight weeks. The ultimate prognosis is also good; practically 100% of the 90 cases recovered, although a few had recurrence of the pneumothorax, and at least one had it on the opposite side. It is also very rare for fluid to form in these cases. I see no reason why such a patient may not have a recurrence of the pneumothorax, because adhesions will again be formed at the site of the tear. This should cause a guarded prognosis and advice as to avoiding severe and sudden exertion.

Just a word as to the tuberculous cases: It frequently occurs without any severe exertion; it often is not complete because of adhesions, and it is generally fatal, due possibly to some disease on the other side or to their depleted physical condition, or because the tear is larger and fails to heal quickly and the lung to re-expand. In those cases which live, fluid practically always accumulates.

Let me conclude by presenting three short histories with their x-ray pictures, and then by demonstrating a case of natural pneumothorax in a man with tuberculosis.

Case 1. A. B., 41 years old; miner; patient of Dr. Boardman. Complaint, shortness of breath—20 days.

Family History.—Negative.

Previous History.—Never sick; no frequent colds.

Occupation.—Dry-drilling in a gold mine for eleven years, with the exception of 1½ years.

Present Illness.—For past few months patient has had some cough and expectoration, which has been dark and filled with dust. About two months ago noticed some shortness of breath on exertion. This persisted, but did not interfere with work until twenty days ago, when, at quitting time, after a full day's work, felt weak and so short of breath that he could not walk fifteen feet without rest. This marked shortness of breath lasted only two or three days, accompanied by cough and expectoration. He had no fever, and otherwise was well. After three days he could walk about and dyspnea gradually decreased. At present he has a slight cough and expectoration. He has lost ten pounds in weight, appetite and sleep good; no fever, sweat, or bloody expectoration. Physical examination shows the left side more prominent than the right; motion equal on both sides; hyper-resonance over the left anteriorally and tympanitic posteriorally down to the spine of the scapula. The right side is slightly dull; the heart is displaced to the right. Modified bronchial breathing with a few dry musical râles on the right. On the left the sounds are distant. Whispered fremitus absent over the left upper lobe. At the left base the breathing is bronchovesicular, no coin sound heard. X-ray diagnosis: pneumothorax on left, with pneumonoconiosis.

Case 2. T. K., aged 4; patient of Dr. Ash. Entered hospital December 4, 1916.

Previous History.—Negative; chicken-pox. Development normal.

Present Illness.—Ten days ago child became irritable; had fever in the afternoon, and the local doctor said he had bronchitis. Vomited for the first three days; two days ago had profuse sweats. Examination showed hyper-resonance in the left axilla, with râles at both bases and large interscapular dulness. Two days later there was hyper-resonance over the left chest; breath sounds distant; dulness suggesting displacement of the heart to the right. Four days later the hyper-resonance had almost disappeared; there were still râles pretty much throughout the left side. On following day the râles were still heard at the left base and the right apex; temperature to about 99.6 every afternoon. X-ray showed pneumothorax left.

CASE OF NATURAL PNEUMOTHORAX IN TUBERCULAR CASE, WITH RECOVERY.

Case 3.—M., a new-born child on the service of Dr. William Lucas, University of California Hospital.

This was the first child of an apparently healthy mother. At birth it was noticed that the child was cyanotic and uttered a very feeble cry. The breath sounds were harsh and high pitched on the left, and very much diminished on the right side of the chest. The next day its color was ashen gray; respirations increased, but the child was not markedly dyspneic. From this time on, it gradually improved, so that on the fourteenth day it was apparently well and was discharged. The x-ray pictures shown below were taken on the third, seventh, and fourteenth days. In Fig. 1 the heart is seen displaced to the left; the mediastinum is also displaced to the left; the left lung is somewhat compressed by the pressure of the heart, and the right pleural cavity does not contain inflated lung. If this represented a case of failure of the right lung to expand, we would expect the heart and mediastinum to be pushed to the right by the greater pressure on the left and the vacuum in the right pleural cavity. From this it seems very clear that there must have been a rupture of the right lung, and that its pleural space was filled with air under pressure. From the gradual expansion of the lung, as shown in Figs. 2 and 3, this theory is substantiated.

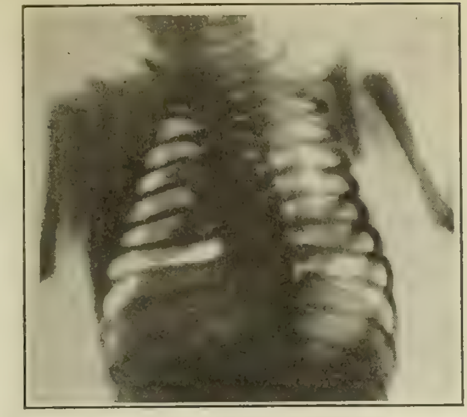

Fig. 1.—X-ray taken on third day, showing collapsed right lung and *displacement of mediastinum to left.*

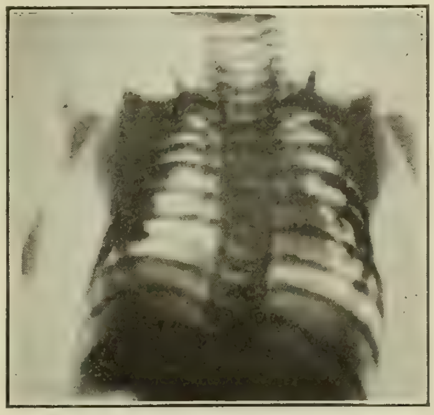

Fig 2.—Seventh day. Right lung almost expanded. Mediastinum still slightly to left.

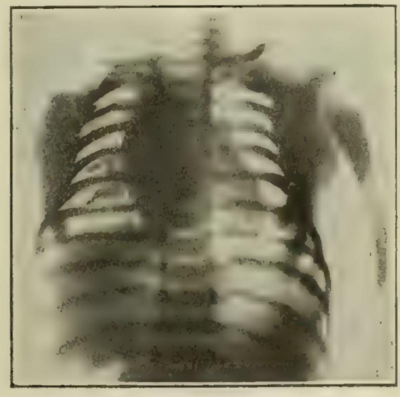

Fig. 3.—Fourteenth day. Mediastinum in normal position. Lungs normal.

Case 4.—V. M., 38; cook.

Family History.—One sister died of tuberculosis.

Previous History.—Negative except for frequent colds. Best weight, 157, three years ago; average, 138.

Present Illness.—Twelve years ago fatigue, loss of weight, slight cough and fever; put to bed and soon felt all right. Three years and seven months ago sudden onset of chill, fever, pain in the side, a "drunk feeling" and sweats at night. He kept working, although one doctor said there was a suspicion of tuberculosis. Three weeks later his sputum was positive. After two months of good treatment, cough almost disappeared and he gained 27 pounds in weight. His first x-ray was taken then, and showed involvement of left apex. Nine months later the same symptoms recurred, and in two months something inside his chest "broke" and he spit up considerable pus, which gave much relief. Then he had apparently perfect health. Thirty months ago recurrence of pain in the chest, cough, spasmodic hoarseness and asthma. Because of the physical signs, he was advised by one doctor to have an artificial pneumothorax. About one month later he suddenly had a "big cough, terrible pain in the chest, things seemed to turn upside down." He coughed up a wine-glass of pus and two glasses of pus a day for two weeks. This had a terrific odor, and was accompanied by high fever. At this time he noticed his heart was on the right side. Rather soon began to feel much better, but six weeks later had another severe attack of shortness of breath. As he recovered he felt water splashing around in his left chest, until eight months ago, at which time, a doctor who saw him said that his chest was full of fluid. When he came to me he complained of weakness on slight exertion, inability to bend over, a cough when he lay down. Physical examination showed the left side full of fluid, heart displaced to the right axilla, and a few transient râles in his right upper lobe. The fluid has gradually been withdrawn, which, with reaccumulated fluid, has amounted to over 11,000 cc. I have introduced air in this left pleural cavity until there is now practically no movement of this lung, which did begin to expand at the end of thoracentesis, two months ago, making the total time for which this lung was collapsed, eighteen months. His blood Wassermann was negative; his blood tubercular test was one plus, chest fluid tubercular test four plus. Chest fluid at first showed specific gravity of 1019, a few pus cells, no tubercular bacilli. About three months ago tubercular bacilli were found in his chest fluid, as well as in his sputum. The last fluid withdrawn was much more turbid, and of specific gravity 1021. He has had no fever.

DISCUSSION.

Dr. H. D'Arcy Power: These cases are very interesting to me. I had no idea that the non-tubercular form was such a rarity. It happened to be my luck some few years ago to have a case which I think must be placed in this group. I have good reason to remember it, because it was a week after the fire, and there was no available aspirating apparatus. Everything had been burned up. The patient, a man about forty years of age, a farmer, was sent in from the Sierras, with the story that he had caught a cold and quite suddenly felt pain in his chest, with cough. The local practitioner could not make anything definite out of it, and sent him to me. I made an examination of the chest, and found very much the condition described here tonight—a localized pneumothorax. He had an area of absent respiratory sounds on the right, and tympany, and quite distinct splashing. He was not coughing at the time, had no fever, and, except for a little pain, was practically symptomless. I borrowed a spinal injection needle from Dr. Evans, and with the aid of a Davidson syringe, a piece of glass tube and a bottle, made a very good aspiration apparatus. I got out quite a little air, under pressure at first, and then, I suppose, thirty or forty cc. of clear fluid. He made an uneventful recovery, and while I was unable to follow the case up, I heard from him five years afterward as without any tuberculosis or other symptoms.

I do not know what caused it. It has always been a puzzle to me, and that is the reason I mention it. I think probably if these cases were more carefully looked for, we should meet them oftener than we do. Among cases of, not spontaneous, but accidental pneumothorax, we probably have more than are generally reported. Some years ago, in Grass Valley, I was called in consultation to a child with double bronchial pneumonia. The doctor in charge got the idea that the child had fluid, and stuck in a large exploratory needle. Aid went in and the child went out. I have no doubt these things occur more often than we know. They are not likely to be reported.

Dr. Rachel Ash: I have seen two of the patients described by Dr. Pierson this evening. The case of the boy of four years was not as simple as it would appear. The child was exceedingly irritable, had severe spasms, Babinski, and various other phenomena pointing to an involvement of the central nervous system. He entered the Children's Hospital with the history of a recent bronchitis. On examination, posteriorly there was a tympanitic area, and below this a definite dulness, which I took to be fluid. I inserted an intramuscular needle very carefully, and was surprised to see the piston forced back immediately, by what was evidently a gas under pressure. The next day, pneumothorax was confirmed by the x-ray. I felt that possibly there might have been some adhesions between the parietal and visceral pleura, and that I had punctured the lung. I was much relieved to find that the pneumothorax had no apparent etiology, and that Dr. Bryan had found in the roentgenogram secondary tuberculosis and bronchial adenitis. I was never able to find the cause of the various nervous phenomena. We know nothing of the later history of the child, but he was in good health and running about before he left the hospital.

The other child was born at the U. C. Hospital. Our attention was first called to the patient by the severe cyanosis. One side of the chest was practically immobile; the x-ray made the diagnosis absolute. This child's chest also cleared up. The question there, of course, was whether there was a true congenital atelectasis, the lung having never expanded, or whether there was a rupture of the lung with the first cry. Unfortunately, no pleural puncture was made, to establish the presence or absence of air. There was apparently no pleural effusion in either case.

Major E. S. Kilgore: Dr. Pierson's last case illustrated well the enormous capacity of the lung to expand after being contracted very much for a long time. This was impressed upon me very forcibly some years ago in connection with a somewhat similar case. A young man, about twenty-four, complained of shortness of breath, amounting to disability. This was the only symptom he had had for about a year. From the history we felt sure his pneumothorax, which was a right-sided one, had existed about a year. X-ray showed the lung contracted to about the size of one's fist. The intrathoracic pressure was measured, and instead of positive pressure, which is the rule in early cases, he had negative pressure; so that, presumably, air had been absorbed as much as possible, and the condition was stationary. Attempt to withdraw any considerable amount of air failed. A surgical consultant, who was particularly interested in chest surgery, felt that several of the patient's ribs ought to come off in order to strip off the fibrous tissue and allow the lung to expand. The internists, however, decided to try more aspiration, in small amounts, and small amounts of air were taken out every other day for a considerable period of time. In the course of a few weeks, the lung completely expanded, x-ray showed a normal chest, and instead of being short of breath, he could run around the block as comfortably as a normal man, and a year later was in the same condition.

In regard to accidental pneumothorax resulting from chest puncture, the more dangerous cases are those *without* pleural adhesions. Fatalities have been reported following in a few hours after a needle has been stuck into a fairly normal lung. As there are no adhesions, the lung can contract easily and completely, and the sudden throwing out of so much lung space results in fatality. Pleural adhesions very much increase the chances of puncturing the lung, but, fortunately, they also prevent serious pneumothorax when such puncture occurs. Radiograms taken after ordinary chest punctures show minor degrees of pneumothorax oftener than we are in the habit of thinking.

DR. PIERSON (closing): Dr. Power's case is of interest, and I think would possibly come under the group of cases that are due to emphysematous blebs. It is very possible that this case had one of those blebs, which was ruptured by a little extra exertion.

I think I saw that case that Dr. Kilgore spoke of, and just after that I think he gave the man some blowing exercises which helped expand his lung.

A few nights ago, while I was thinking about this paper, I was called out at half-past eleven to see a tuberculosis case that had been doing very well. I mention this case because it shows how suddenly symptoms of this condition happen, and how unexpected it is. This man had been doing very well, had gained thirty pounds, had a good position, and was feeling so well that he bought a new suit of clothes to celebrate his birthday, which came this week. Saturday night at 8.30 he began to feel mean. At 9.30 he was short of breath. At 11.30 respirations 45, and cold sweat all over him, though no pain. The right chest moved less than the left, there was a dull tympany and very much diminished breathing on that side, and exaggerated breathing on the other side. The condition was severe, and the man died at 1.30 that night. I think that brings out the fact that in these cases that are tuberculous, the pneumothorax is almost always fatal, because there is probably a good-sized rent, and there is no chance for it to heal over and the lung to expand.

OBSERVATIONS ON DISABLED SHOULDERS, WITH ESPECIAL REFERENCE TO SUB-ACROMIAL BURSITIS.*

BY HILBERT F. DAY, M.D., BOSTON,

Surgeon, Boston Dispensary; Associate in Surgery, Peter Bent Brigham Hospital; First Assistant Surgeon, Beth Israel Hospital.

FOR the last four years I have been particularly interested in the cases of shoulder injury which I have seen at the Brigham Hospital, the Boston Dispensary and in private practice. As the subject has seemed to offer no definite "open and shut" means of making a diagnosis nor hard set rule for treatment, it has proved well worthy of careful study. Some of the facts which I have been able to learn may be of value to you who, perhaps, have not given much thought to them.

It may seem presumptuous for me to write a paper on this subject when we have in Boston another surgeon, namely, Dr. E. A. Codman, who is considered all over the country as an expert in shoulder injuries, and who has made an exhaustive study of them. Nevertheless, as none of his writings have been very recent, they may not have been brought directly to your attention. In elucidating the subject, therefore, I will not hesitate to use some of the facts he has worked out.

Cause. In practically all cases of shoulder disability, a history of trauma can be obtained. The order of frequency, as I have found it, is (a) direct fall on the point of the shoulder, (b) fall on the hand with strain transferred to the shoulder, (c) pull on the shoulder as by a sudden lurch of the body while hanging on a strap.

Symptoms. Generally there is at first soreness about the shoulder due to a definite contusion. This soreness may subside and then develop obstinate, persistent and often very acute *pain* in the shoulder. The pain is generally constant, but is sometimes intermittent, increased by motion of the arm, and is often worse at night. It is usually referred to the upper portion of the arm in the front and outer aspects, rather than posteriorly. This pain is sometimes described as running down the arm and forearm, or even up into the neck. The next most frequent and disabling symptom is *limitation of motion,* generally evidenced by loss of abduction —active abduction slightly less than passive— and accompanied by more pain. External and internal rotation (in reaching suspender buttons behind, the arm is internally rotated; and in reaching the back of the head with arm abducted, it is externally rotated) are also usually diminished as compared to normal. There is generally no deformity unless there is an unreduced dislocation, fracture or muscle atrophy due to long standing disuse.

In all cases of shoulder injury, an x-ray picture should be taken, for it frequently clears the diagnosis, as without it a small fracture about the shoulder joint may be overlooked. Most of the cases of shoulder injury that have come under my observation have been seen by me several days or weeks after the initial injury and, therefore, in this study we can disregard recent dislocations and very evident gross fractures. The diagnoses of injuries seen at later periods have in their frequency appeared in the following order:

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* Read at a meeting of the Boston Chirurgical Society, Dec. 28, 1917.

1. Sub-acromial bursitis,
    a. Without further injury,
    b. With tear of the supraspinatus tendon,
    c. With calcareous deposit.
2. Injury of the supraspinatus tendon alone. (It is probably caused by pressure of the sharp, under edge of the acromion on the tendon, made during sudden, violent motion of the arm).
3. Fracture of the greater tuberosity of the humerus.
4. Loose joint capsule causing some subluxation of the humerus.
5. Traumatic periostitis.
6. Disease of the head of the humerus, as syphilis, tuberculosis or neoplasm.
7. Brachial neuritis.

As the differential diagnosis may be easy or may be quite difficult, a few words of explanation about each of the foregoing injuries may be helpful.

1. As to the various types listed under subacromial bursitis, it is difficult to say at first whether the supraspinatus tendon is torn. If there are calcareous deposits, they will show in the radiograph.

2. I have seen no acute case where I could be sure that the supraspinatus tendon alone had been torn. In a general way there would be complete loss of abduction with very little tenderness and pain. In chronic or long standing cases, when the bursal inflammation has disappeared, a diagnosis can be made rather easily. It is done in the following manner: Have the patient stand with arms extended in abduction to the level of the shoulders and then have him counter-abduct against downward pressure made on his arms by the examiner. A defective supraspinatus tendon, although strong enough to abduct an arm alone, allows the arm to waver under the added weight.

3. A fracture in the shoulder joint should show up in an x-ray and, therefore, if taken at a proper angle, a fracture of the greater tuberosity of the humerus would show.

4. If there is subluxation of the humerus, there is generally a slight prominence of its head in front with depression behind and no flattening of the deltoid muscle. It is accompanied by pain radiating down the arm and inability to abduct. This is rarely seen, as the acute cases are so easily reduced; and this reduction is generally accomplished by a lay person before the patient reaches a doctor.

5. When there is periostitis, it is apt to be fairly well defined and is often accompanied by fever. As this disease progresses, there are changes in the bone which are demonstrable by the x-ray.

6. Such diseases as syphilis, tuberculosis and neoplasms of the bones about the shoulder joint are chiefly diagnosed with the help of the x-ray.

7. As to brachial neuritis, I have seen only one case which I was willing so to diagnose, and in that case there was tenderness above the shoulder in the neck, and in following the case, there was later some sensory disturbance in the arm. Cases where there has been an old neck injury, or where there is a slight chronic irritation of nerves in the neck are sometimes confused with cases of brachial neuritis, for they are apt to have occasional vague pains referred to the shoulder.

As the greatest number of cases of disabled shoulders are included under the subacromial bursitis group, I am going to confine my discussion to them.

Anatomically the subacromial bursa embraces what is often spoken of as the subdeltoid bursa. This latter division disappears when the arm is abducted and is simply that portion of the subacromial bursa which lies under the deltoid muscle beyond the acromion process when the arm is adducted. The bursa is 2½ to 3 inches in diameter. Its under surface is firmly attached to the tuberosity of the humerus and to the expansion of the supraspinatus tendon. Its upper surface is attached to the under surface of the acromion and coraco-acromial ligament, and to the under fibers of the deltoid muscle. From this description you may see that with the arm adducted the subdeltoid portion of the bursa is exposed to trauma. If this portion of the bursa is inflamed for any reason, it causes a mechanical obstacle to free abduction of the arm as it tries to slip under the acromion process. It is not generally realized that in extreme abduction it actually has to pass beneath the acromion ligament. Its function is to avoid friction at the time when the tuberosity of the humerus passes under the acromion ligament. When the supraspinatus tendon is injured or lacerated, full abduction is impossible, for it is the essential abductor of the shoulder. The deltoid muscle, as demonstrated by Codman, although popularly supposed to abduct, has its chief function as a means of holding the head of the humerus firmly under the acromion and in the glenoid cavity.

Acute, subacute and chronic cases have all come under my observation, and in certain individuals, where treatment has not been carried out properly, all three phases have been observed. In the *first type* pain is the outstanding complaint, abduction is limited by pain, and pain at night is particularly troublesome. There is also some effusion into the bursa, and the bursa is correspondingly tender to pressure. A useful diagnostic sign of this stage and one which often surprises the patient is shown in the following way. Have the patient bend over and let his arms swing forward, then ask him to straighten up, holding his arms as they are. To his surprise he then finds he can fully abduct his affected arm without pain. This is due to the fact that the tuberosity has passed beneath the acromion. Of course the pain reappears when he lowers or adducts his arm. In the *second type,* because adhesions have then formed between the floor and roof of the bursa, the arm cannot even passively be fully abducted because the tuberosity of the humerus cannot pass beneath the acromion. This is demonstrated by showing that the scapula moves with the humerus in all its motions beyond a very few degrees of unrestricted abduction. In the *chronic type,* the adhesions having generally broken up, abduction is again possible but often painful, and sometimes jerky, due to the roughening of the bursa. Generally, the more the patient uses his arm, the more he has to suffer with pain in his shoulder, which often manifests itself some time after the actual motion.

Practically all cases of subacromial bursitis which have been under my observation long enough, have recovered despite treatment or the absence of it. The duration of symptoms seems to vary in untreated cases from six months to three years. A few cases who have been willing to carry out ideal treatment, have completely recovered in two weeks. I feel sure that proper treatment at any stage of the disease will often materially shorten its course.

Proper treatment, according to my observations, is as follows: The acute cases should be given aspirin for their pain and treated, as W. W. Brickner of New York suggests, by being put to bed "in a semi-recumbent position, supported on pillows not too soft. The affected arm is abducted on a pillow as far as it comfortably can be. A muslin bandage is then lightly looped about the wrist and carried to a convenient spot on the headpiece of the bed, where it is fastened.† The upper end of the bed is then raised on 'shock blocks' or chairs. As the patient's body little by little slides down in bed his arm travels (relatively) further and further up and thus a shoulder that obstinately resists forcible efforts at abduction yields steadily, painlessly, to this gradual countertraction, which the patient often does not even feel." This treatment has been successful in every acute case where I have used it, cures being accomplished in from five to twelve days. Aspiration of the bursa is said to be helpful when there is a large amount of effusion into it causing intense, constant pain. I have never myself used this treatment. In some acute cases where there has been a partial rupture of the supraspinatus tendon, with an immediate operation, the tendon could be repaired and long weeks of disability saved. Also, as adhesions form in the bursa and there are often calcareous deposits in or below the bursa towards the end of the acute stage, these cases could well be treated by operation and so shorten convalescence. As I am advising operation for a certain number of patients, knowing it will give quick relief of symptoms, a *description of the operation* is not out of place.

The patient should lie on his side on a flat table. Local anesthesia with novocaine is perfectly satisfactory, but a general anesthetic is more often used, the forearm and upper arm wrapped separately, so that motion at the shoulder joint can be obtained during the operation. A two or three inch incision should be made from the acromion process down over the greater tuberosity of the humerus. The fibers of the deltoid muscle should next be separated by blunt dissection and retracted. When this is done the roof of the bursa will be exposed. Its roof can then be carefully incised for practically the entire length of the incision and its sides retracted so as to expose its interior. When this has been done, pulling downward on the arm will sometimes allow the bursa to fill with air and so make its cavity more easy to explore with a finger. Villous masses or adhesions can now be cut away. The floor of the bursa in acute cases may be found to be reddened and puffed up with a whitish center like a boil which, when incised, exudes a whitish material varying from a smooth fluid in these acute cases, to a thick, granular, sand-like substance in the older ones. This substance should all be scooped out, but not forcibly curetted. When this is done the floor of the bursa is retracted out of the way so that the tendon of the supraspinatus is brought in view. If there is a tear in it, it should be repaired. This can be done with vertically placed sutures, preferably chromicized catgut, though silk may be used. The wound may now be closed carefully in layers. The fibers of the deltoid fall together, but are best approximated by a couple of catgut sutures not placed deep enough to pierce the roof of the bursa. The arm is then put up in abduction, preferably in a plaster-of-paris spica. This plaster-of-paris spica, in my opinion, is not absolutely essential, for I feel that if the arm is held in abduction, as described above, it will do perfectly well, though perhaps a firm dressing for the few hours immediately following operation may make the patient more comfortable.

The subacute cases, namely, those where adhesions have formed, require more ingenuity and patience in their treatment. Generally speaking, they may be handled in three different ways.

a. By an operation (such as has just been described) with the object of separating adhesions and, if necessary, removing the bursal floor.

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† Since first drafting this paper I have accepted and used a modification suggested by Codman. He binds a splint to the back of the forearm, extending from the hand to the elbow, and runs cords from either end of it to the head of the bed. By this means a distribution of traction takes the place of a pull on the wrist. The cords are so arranged that they can run along the top of the bed and give the arm a little play.

b. By forcible breaking up of adhesions with manipulations, the patient being anesthetized.

c. By gradual stretching, as is accomplished by nature without treatment, or more rapid gradual stretching by massage, passive motion, Zander treatment or active exercises.

The treatment of *chronic* cases, namely, those cases where the adhesions have been broken up and where motion is possible but perhaps painful, generally needs patience and considerable time. Patients of this type should have baking and massage at regular intervals, generally every other day, and should be given definite exercises to follow up by themselves. These exercises should be graded according to the amount of reaction they set up, and are best taken at night when they may be followed by a period of rest. One of the best preliminary exercises is to have the patient put his hand on a wall and slowly abduct the arm, creeping up the wall with his fingers. In this way his arm will receive some support and the abduction is accomplished gradually.

In all cases, as a routine procedure, the teeth, tonsils, gastro-enteric tract and in fact any possible focus of infection must be eliminated. It is not my belief that subacromial bursitis can be caused by infection. Trauma is essential. However, I do believe that, given an injured bursa, secondary infection may keep up its inflammation.

CONCLUSIONS.

Subacromial bursitis is a definite demonstrable disease and has certain characteristic symptoms. Its prognosis is ultimately good. Its cure can be hastened by proper treatment.

In the Peter Bent Brigham Hospital Out-door Department, I have observed and tabulated 64 cases diagnosed as subacromial bursitis during the years 1915, 1916, and nine months of 1917. More of these cases have been seen in the last year and a half, due to the increased size of the clinic. Of these there were thirty-two males and thirty-two females. The ages varied from a child of ten years to a woman of sixty-five, and apparently age has no particular significance except that the younger cases seem to recover from symptoms more rapidly than the older ones. Occupation, also, seems to be an unimportant factor, for in this series there were clerks, nurses, students, teachers and laborers. In a general way, the more highly educated the patients, the quicker they get well because they are more persistent in following treatment. Causes given by them for their disability are as follows:

Direct trauma,	29 cases
Indirect trauma,	6 " (as by falling on the hand or elbow).
Unusual use of arm,	10 "
Unknown,	19 "

At the time of their first visits to the hospital, these cases fell into the following divisions:

Acute,	26,
Subacute,	25,
Chronic,	13.

The cases made visits ranging from one to sixty per patient. In a general way, the acute cases made only a few visits and the chronic cases made many. One or more forms of treatment, as outlined in the foregoing paper, have been tried with each case. Six cases have been mobilized under an anesthetic, three have been operated and three others have refused to submit to the operation advised.

THE RED STREAK: A SIGN OF DISEASE.

By Edward A. Tracy, M.D., Boston.

In the Journal of December 6, 1917, was published, "A Method of Testing the Vasomotor Reflexes of the Skin." By using the method therein described in the investigation of conditions both of health and disease, it was found that in a large number of disease conditions the reflex vasodilation—or better termed, "the reflex diastole"—of the peripheral vessels of the face, was notably lengthened in duration. The normal reflex diastole was found in that location not to exceed fourteen seconds—the stimuli evoking the reflex being a stroke of a smoothened wooden tongue depressor applied with a pressure approximating two and a half ounces.

When the reflex diastole lasted more than fourteen seconds, invariably in non-medicated cases, a diseased bodily condition was found present.

This abnormal reflex diastole may be graphically termed the "red streak." The red streak is defined, therefore, as the reflex diastole lasting over fourteen seconds, evoked by stroking the face with a suitable instrument, such as a smooth wooden tongue depressor, with a pressure approximating two and a half ounces. Preferably, a cheek is stroked, otherwise the forehead. As before stated, when present in non-medicated cases, invariably a diseased bodily condition was also present. The red streak may be taken, therefore, as a sign of disease. This view is based upon a study of 392 cases in which the red streak was found present. In 388 of these cases the diseased bodily conditions named in Tables I and II were found. In four cases, a mild hyperthyroidism was believed present from the symptoms, but with no facilities to test the metabolism in these cases, the diagnosis remains unconfirmed.

In 310 of the cases—79% of them—a purulent condition in some part of the body was found; the remaining 82 cases being non-purulent disease conditions of the body. For this reason, in non-medicated cases, when the red streak is constantly present when tested for, the first thought is of pus. If thorough search excludes a pus focus, there is present infection, or a disturbance within the domain of endocrinology—a disturbance in the balance of the internal secretions—and manifested by lymphatism, hyperthyroidism, hyperplastic thymus, diabetes mellitus, etc. (See tabulation of cases with the red streak associated with non-purulent disease conditions.)

The relation of the red streak to the thyroid secretion has been shown in cases of mild myxedema, in which the normal reflex diastole of the face to stroking was absent. In these cases, on administering to them thyroid extract, the red streak appeared. Digitalis medication can also lengthen the normal reflex diastole of the peripheral blood vessels, and so give the red streak; likewise, pilocarpin.

Functional heart cases—so-called nervous heart—is found associated with the red streak. Twelve cases were met with and tested. All gave the red streak. In four of these cases, the phenomenon of partial fading and intensifying of the streak, *i.e.*, active systole and diastole of the peripheral vessels, was visible.* This phenomenon, so far as I am aware, has not been observed before; at least I have met with no account of it in the literature. In one case in which this phenomenon was noted, at the same time there was present reduplication of heart sounds and irregularly acting heart. Some weeks after, on examining this case again, the red streak was found present, but the active systole and diastole of the vessels forming it were absent. The irregular action of the heart, noted before, was also absent.

A practical illustration of the value of the red streak in diagnosis is furnished in focal infection. In several cases of apical abscesses, a positive diagnosis was made from the presence of the red streak associated with slight tenderness to pressure over the root that had at a previous period been opened and treated. The diagnosis in these cases of apical abscess was confirmed by radiograph or by evidence furnished on root extraction.

In this brief paper no attempt is made to treat of the causation of the red streak. While such an essay might interest students of vegetative neurology, it would add nothing to the clinically determined fact that the red streak is a sign of disease.

TABLE I.

PURULENT DISEASE CONDITIONS FOUND ASSOCIATED WITH THE RED STREAK.

1.	Purulent gingivitis (accompanying dental caries)	192 cases
2.	Purulent gingivitis and acne	1 case
3.	“ “ and hypertrophied tonsils.	35 cases
4.	Purulent gingivitis and mumps	1 case
5.	“ “ and purulent anterior nares and adenoids	1 case
6.	Purulent gingivitis and eczema	3 cases
7.	“ “ and impetigo	1 case
8.	“ “ and cervical adenitis	1 case
9.	Purulent gingivitis and functional heart trouble	1 case
10.	Purulent gingivitis and herpes simplex	1 case
11.	“ “ and otitis media chronica	1 case
12.	Purulent gingivitis and purulent posterior nares	1 case
13.	Pyorrhea dentalis	13 cases
14.	“ “ and asthma	1 case
15.	Alveolar abscess	3 cases
16.	“ “ and pyorrhea dentalis	1 case
17.	Purulent anterior nares	6 cases
18.	“ “ “ and purulent gingivitis	1 case
19.	Purulent posterior nares and hypertrophied tongue papillae	1 case
20.	Otitis media chronica	4 cases
21.	Furunculosis	10 cases
22.	Stye	9 cases
23.	Skin ulceration	5 cases
24.	Skin ulceration and hypertrophied tonsils	2 cases
25.	Impetigo	2 cases
26.	Ulcer and eczema	1 case
27.	Acute tonsillitis	3 cases
28.	Acute cervical adenitis	1 case
29.	Acute sublingual adenitis	2 cases
30.	Acute occipital adenitis	1 case
31.	Chronic blepharitis	1 case
32.	Infective arthritis with pus in urine	1 case
33.	Suppurating mastoiditis	1 case
34.	Phthisis pulmonalis	1 case
35.	Cerebral meningitis	1 case

TABLE II.

NON-PURULENT DISEASE CONDITIONS FOUND ASSOCIATED WITH THE RED STREAK.

1.	Hypertrophy of the tonsils	26 cases
2.	Hypertrophy of the tonsils and cervical adenitis	1 case
3.	Hypertrophy of the tonsils and cervical and axillary adenitis	1 case
4.	Hypertrophied tonsils and hypertrophied tongue papillae	11 cases
5.	Hypertrophied tonsils and hypertrophied tongue papillae and cervical adenitis	1 case
6.	Hypertrophied tonsils and adenoids	2 cases
7.	Cervical adenitis (chronic)	2 cases
8.	Cervical adenitis and hypertrophied tonsils and hyperplastic pharyngitis	1 case
9.	Cervical adenitis and hypertrophied tongue papillae and hyperplastic pharyngitis	1 case
10.	Cervical and axillary adenitis	1 case
11.	Hypertrophied tongue papillae (hypertrophied tonsils excised 2 years before)	1 case
12.	Mumps and hypertrophied tongue papillae	1 case
13.	Mumps—4th day after onset	1 case
14.	Mumps—8th day after onset	1 case
15.	Mumps 12 days after onset, and axillary adenitis	1 case
16.	Functional heart trouble	12 cases
17.	Eczema	8 cases
18.	Hyperthyroidism	5 cases
19.	Hyperplastic thymus	1 case
20.	Diabetes mellitus	2 cases
21.	Syphilis—3d day of chancre	1 case
22.	Syphilis—3d month of disease, untreated	1 case

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* The phenomenon of active systole and diastole of peripheral vessels as a reflex to stroking the face, was observed, also, by school nurses Edith W. Sheehan and Emily A. Snow.

WELFARE INSURANCE AND THE FACTORY.

BY J. F. CURRAN, M.D., WORCESTER, MASS.

AT the present time there is much discussion of welfare insurance, or, as it is more commonly called, health insurance. The plan, as proposed, is that the State bear two-fifths of the cost of maintenance, the factory two-fifths and labor one-fifth.

Erroneous conclusions have been arrived at regarding the value of health insurance, due to a misconception of the true meaning of insurance. First of all, insurance does not imply prevention. Many of the enthusiastic supporters of social insurance plans have claimed that compulsory health insurance will prevent sickness. Let us remember that insurance is not prevention, but that it is indemnity for loss. Health insurance is proposed as a means to replace the wages which are lost by illness. To devise the methods by which funds could be collected and payments made would be a comparatively simple task. All that is necessary would be to collect the required data and prepare a table of rates. But there are other more important phases of this question which must necessarily be considered.

The medical profession is concerned in this, since it must decide whether the claimant is entitled to compensation or not. A difficulty will arise when the physician is called upon to make this decision; also, when he attempts to give medical attendance.

Are we to have salaried physicians, such as a board like the medical corps of the army and navy, who will give their whole time to insurance work, or are we to have individual physicians with their fees? This is a question, the decision of which must be left to the medical profession. It cannot be fixed either by the State, corporations, or a group of individuals.

In Germany, where such a plan has been tried, physicians have refused to give treatments. This has cost the German nation hundreds of thousands of dollars, and there has not been any decrease in the number of accidents or in the number of cases of illness.

In Ohio, social insurance has not been a success. The rates per $100 of payroll have increased alarmingly without any progress being made in prevention measures.

Social insurance has one advantage for the worker—it partially replaces the wages he loses by reason of his not being able to work during a period of sickness. Under the proposed working plans there are no discernible advantages to the employer.

Its disadvantages, however, are manifold. Social insurance means that individuals will lose a share of their independence. It will be a boon to the loafer and industrial hobo.

The whole scheme, as it has been outlined, is not far-reaching enough. For example, there is no provision made for the men who are self-employed, such as the farmer, the news vender, and many others. It taxes the healthy man and the mental and physical defective at the same rate, and for that reason alone it is unjust. The victim of alcohol pays no more than the normal man, but he receives larger benefits. Again, the clean-living man pays for the support of his fellow workman incapacitated by venereal disease, or its after-effects.

The labor leaders tell us that the average workman complains bitterly of the conditions under which he works; but let us provide him with social insurance of about $10 a week while ill, and he is perfectly satisfied to work under the same conditions. This would be a backward step for preventive medicine. It does not seek to remove the causes for illness and accidents.

Many of the proponents of this type of insurance fail to realize that it does not exact anything more from the employer than the payment of his share of maintenance.

Moreover, it might directly prevent many employers from taking the necessary steps toward making their factories hygienic and healthful. If the employer merely has to pay his share, naturally he will do no more than the law specifically requires. This is manifested in the attitude the manufacturer takes toward accident insurance. He pays his premium and lets the matter end there. If, however, the number of accidents reduces his production and causes an increase in his labor turnover, then he does what he can to prevent accidents. Sickness decreases production and increases labor turnover, so we may be justified in thinking that the employer will take an active interest in any plan that will prevent sickness.

Convincing the employer and enlisting his aid are not sufficient. We must have the coöperation of the employee. He must do his share in the line of preventive measures.

This, then, is our problem. In my opinion the time for social insurance is not opportune. What we need is a widespread campaign to bring about preventive measures relating to sickness and accidents and to introduce the practice of surgery in the factory.

Every factory should have a hospital and it should be conducted by a trained industrial surgeon. It is true that the cost of maintenance is great, but the hospital shortly proves its worth.

For concerns who do not feel that they can afford a dispensary, I have this plan to suggest. Let two or three small concerns within easy reach of each other club together to maintain a small hospital in each factory. They could secure the services of a full-time nurse for each, and one surgeon, who would spend a stated number of hours at each factory daily. The next step would be to introduce the following requirements:

1. To make physical examination of all prospective employees and re-examine all physically defective employees, and to advise corrective measures.

2. To treat accidents immediately after they occur and to give subsequent treatment.
3. To make examinations and give advice in cases of sickness.
4. To formulate and control sanitation measures throughout the works.
5. To promote health education among employees.

Physical examinations are necessary in order that men may be recommended for work best suited to their physical condition, so that a minimum amount of lost time, due to sickness, will result. Each man should be compelled to report to the hospital for treatment of accidents and minor illnesses.

If the man is so ill that he is unable to work, he should be permitted to choose his physician; but he should pay that fee himself. I favor this procedure for two reasons: the man in this case will be better satisfied because he feels that he has a doctor who is personally interested in his case, and it will gain for the industrial surgeon the coöperation of the general practitioner who is not actively engaged in industrial work. More than that, since the general practitioner is mainly dependent on the laboring man for his livelihood, he should retain this source of income. Under the panel system of social insurance this would not be permitted, and the physician will suffer greatly if the measure becomes effective.

In conclusion, I believe that preventive medicine, as a department of industrial hygiene, should receive more attention than it now does.

This, plus a better coöperation between employer and employee on those unfortunate cases which will always exist, can in a large measure correct the condition of the unfortunates in question.

State insurance in the form of law does not meet the situation. It has proven so in Germany and England, where it has been experimented with on a large scale.

I believe the final solution will lie in the industries themselves settling this question, as they have those of safety and prevention of accidents.

THE CONTROL OF A SMALLPOX EPIDEMIC BY VACCINATION.

By A. G. Gould, Ph.B., M.D., Akron, Ohio.

During the summer of 1917, a few cases of smallpox developed in the factory of The Goodyear Tire & Rubber Co. These cases were nearly all of unknown origin and occurred mostly in the people who had come from the South, where vaccination laws are not so rigid as in the Northern states. None of these cases had ever had a successful vaccination.

During the autumn, cases broke out in the factory numerically as follows:

September	2
October	10
November	32

Few of these cases were seen prior to the onset of their eruption, and none were recognized as smallpox until the eruption appeared.

In view of the fact that cases were also present in Akron, and that new cases were developing rapidly, other than those in the Goodyear factory, and the pest house was very limited in size, it seemed advisable in November to prevent the further spread of the epidemic.

Inasmuch as all cases of smallpox in Akron had developed in those who had never been vaccinated with success, with one exception, and that in a man vaccinated forty years before, it seemed best to compel those in the factory who could not show scars of vaccinia or variola, to undergo vaccination.

Of the 15,000 employees of the company, this affected about 5,000. Many were vaccinated by local physicians. At the Goodyear Hospital, 1647 were vaccinated and all subsequent dressings were made there. There were no complications in those vaccinated at the Hospital, and no serious complications in any of the 5,000. The results follow:

Total vaccinations at Goodyear Hospital	1647
Total vaccinations successful	1415
Total vaccinations result unknown, due to leaving employ	90
Percentage of known "takes"	85.9%

Much of the credit for the high percentage of "takes" must be given to the quality of the vaccine.

Ten of those whose vaccinations were unsuccessful had had smallpox, and one of those who left the company's employ had also had the disease.

The result of the vaccination programme manifested itself immediately. Three cases of varioloid developed in December, but there has been no case of true smallpox in the factory since.

So valuable did this work seem, we have made it a rule to vaccinate all new employees without good evidence of a former successful vaccination.

All of the cases of variola were mild and only one case required bed care, after the appearance of the rash.

Conclusions:

(1) Smallpox occurs, almost without exception, only in those not protected by vaccination.

(2) Vaccination protects longer than the assigned seven years.

(3) Vaccination should not be followed by complications.

(4) Vaccination *en masse* controls smallpox.

Clinical Department.

PREOPERATIVE DIAGNOSIS BY ROENTGEN RAY OF HAIR CAST OF STOMACH.*

By Frederick W. O'Brien, M.D., Boston,

Instructor in Roentgenology, Tufts College Medical School; Visiting Roentgenologist to the Cambridge Hospital, Mt. Auburn St., and Boston Consumptives' Hospital; Member of the American Roentgen Ray Society.

Butterworth,[1] in August, 1909, reviewed at some length the literature and reported 42 cases of hair ball, in only five of which the correct diagnosis had been made before operation. Moore,[2] in 1914, was able to add eleven more from the literature which, with one of his own he reported at the time, brought the number of known cases up to 54; but he made no mention of the number diagnosed correctly, if any. Rudolph Matas of New Orleans,[3] later in that year made an exhaustive survey of the subject and was able to collect some 76 cases of gastro-intestinal hair balls or casts. Indeed his paper, presented before the *Southern Surgical and Gynecological Association* at Asheville, December 15, 1914, not only is to date the most complete exposition of the particular subject at hand, but may well stand as a model for writers on medicine.

I have found but two other cases reported since that time, so that it is fair to conclude that this type of gastric foreign body is a rarity, but not so infrequent but that one should bear it in mind as something more than a possibility in gastro-intestinal diagnosis.

Matas laid stress upon the value of roentgen examination in reaching a diagnosis in these cases and reported eight correct diagnoses by means of preliminary x-ray examination. Thurston Holland of London,[4] was the first to publish the roentgenographic appearance of hair cast of the stomach. While in this case he had not made a positive diagnosis of the actual condition present before operation, his colleague Barclay had suggested it. Very shortly afterwards Holland[5] examined a similar case and was able to make a positive diagnosis by x-ray before operation. His description of his roentgen findings in this case are now somewhat of a classic.

The roentgen appearance of my own case reported here is quite distinct from that of Holland's, and while in the case in question I made a definite diagnosis of hair ball, it would not be fair so to conclude from its roentgen appearance alone. In fact, the roentgen evidence in itself only justified a diagnosis of intra-gastric tumor. Malignancy could not be ruled out absolutely by x-ray, but could rather definitely when considered in conjunction with the patient's history and other clinical data. Benign tumors of the stomach are rare, and while a lipomatous stomach wall might give us the appearance seen in our case by x-ray, the roentgenoscopic (fluoroscopic) examination made while the patient ingested the opaque meal, satisfied us that we were dealing with a foreign body.

The patient, Mrs. J. H., aged 29, was seen in consultation with Dr. H. H. Germain at the Cambridge City Hospital, November 5, 1917. Small of stature, well nourished and apparently of normal mentality, the patient presented objectively a palpable mass occupying the epigastrium, right upper and a portion of the right lower abdominal quadrants that seemed contiguous with the liver. Clinically it was thought the mass might be a new growth or cyst of the liver, involving the stomach.

The following history was elicited from the patient:

Occupation, housework; twenty-nine years old, married, white.

Family History. Father and mother living and well, six brothers living and well, seven brothers died when infants, causes unknown. No history of tuberculosis, cancer, syphilis, diabetes, Bright's disease.

Past History. Mumps, measles, whooping cough when young. Fractured wrist at the age of ten years. Scarlet fever at the age of twelve years. No diphtheria, no diabetes. Tonsillitis three or four times. Catamenia established at the age of eleven years, regular with a few pains, headaches, and has fainted twice. Eight years ago strangulated left ovary by carrying marble slabs. Since then has had considerable pain at menstrual periods. Denies venereal diseases. Married three years ago. Five weeks ago miscarriage of five months' duration, due to fall two days previous. Two years ago tonsillitis.

Present illness. Patient states that in October, 1916, she vomited three or four times a day, especially when drinking water. Could retain solid food all right. Continued to vomit for three or four times for some over three months, the vomitus being a light color and later became yellow, and patient still continued to vomit three or four times a day for nearly four months. Then she did not vomit at all for about one month. Then she began to have vomiting spells, vomitus being yellow in color. January, 1917, patient first noticed a lump in the region of the stomach which has continued to grow larger. Has had sharp, piercing pains at times and at other times would be dull. Pains were localized about the region of the stomach. Patient says she has lost twenty-five pounds weight between October, 1916, and January 1917. Has continued about same weight since. Has had good appetite, but ate small amount of food at a time and at frequent intervals. Patient when asked if she could in any way account for loss of hair from head says that her hair has been coming out some for over a year.

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* Read at the Mid-winter Meeting of Eastern Roentgenologists, Atlantic City. Jan. 4, 1918.

That she does not know of any sickness to cause same or other reason.

It should be noted in passing that in obtaining the patient's history the house officer had noticed the patient's thinness of hair, and the accustomed inquiry in regard to exposure to specific disease as well as laboratory tests were made, but no thought was given to the real cause.

The patient was given the usual contrast meal for x-ray examination and particular care given to the fluoroscopic evidence. The opaque meal was seen to trickle unevenly down and about some obstruction that occupied the major portion of the stomach, since only the stomach antrum and duodenum were seen to fill with the opaque meal which passed rapidly on into the small bowel. The pars cardia and pars media presented a cystic appearance due to the opaque medium passing between the stomach wall and the foreign body which was of uneven density.

The fluoroscopic image and that registered upon the photographic plate giving us the appearance as seen in Fig. 1. The intragastric character of the mass was readily determined, and by the use of the fluoroscope, it was seen to be freely movable and not connected with the liver. A positive diagnosis of hair ball of the stomach was made and on November 7th Dr. Germain removed a hair cast of the stomach (Fig. 2), weighing twenty-nine and one-half ounces, nine inches long, with a cardiac diameter of three inches, that occupied the entire stomach save for the antrum.

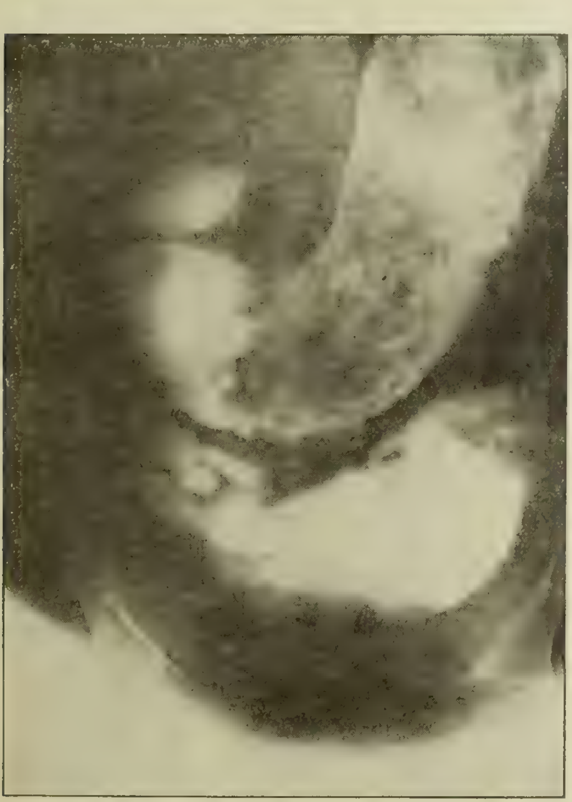

Fig. 1.—Roentgenographic appearance of author's hair cast of stomach.

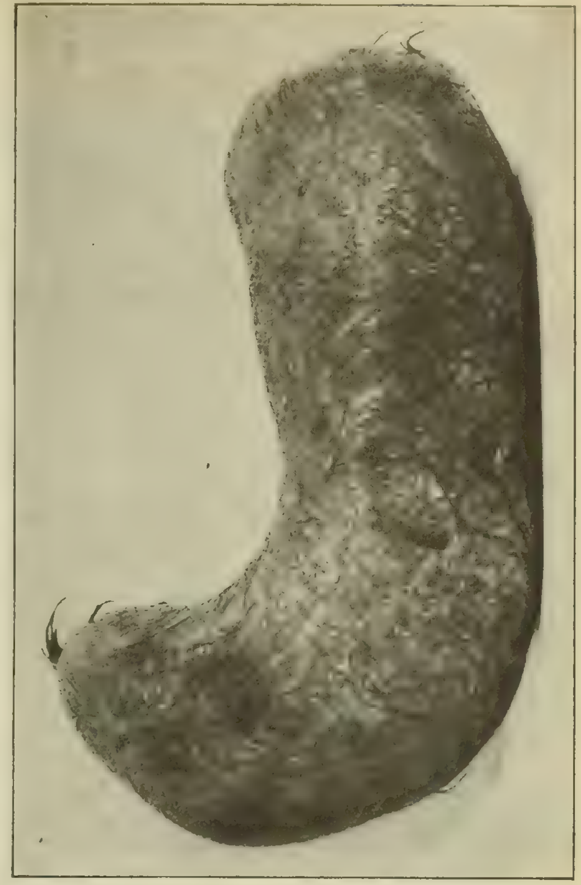

Fig. 2.—Hair cast of stomach as removed at operation.

Even when confronted with the evidence, no admission of the hair-eating habit could be obtained from the patient, her husband or other relatives.

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Book Reviews.

A Manual of Organic Materia Medica and Pharmacognosy, an Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Drugs. (With syllabus of inorganic remedial agents.) Comprising The Botanical and Physical Characteristics, Source, Constituents, Pharmacopeial Preparations, Insects Injurious to Drugs, and Pharmacal Botany. By Lucius E. Sayre, B.S., Ph.M., Dean of the School of Pharmacy; Professor of Materia Medica in the University of Kansas; Member of the Committee of Revision of the United States Pharmacopeia; Director of Drug Laboratory for State of Kansas. Fourth edition, revised. With 302 illustrations, the majority of which are from original drawings and photomicrographs. Philadelphia: P. Blakiston's Son and Company.

The author has prepared a book which does not differ very considerably from the other editions which have preceded it and which continues the merits and often the errors of the earlier editions. It confines itself, as the title indicates, almost entirely to a description of crude and prepared drugs, with but slight reference to their therapeutic action.

As a text-book for students of pharmacology, it is undoubtedly valuable, but for the physician it presents but little of interest. Some of the views of the therapeutic application of drugs are extremely vague, if not positively incorrect. For instance, on page four, the author in his description of acids, declares that, "When much diluted, they are administered for the purpose of checking hyperacidity of the stomach, by stimulating the production of the alkaline pancreatic juice and checking acid gastric juice." If this were true, then much of the modern investigation is futile.

It is unfortunate, too, that with drugs, first introduced under a fanciful name by the manufacturer, which have been later adopted by the pharmacopeia, with a name conveying some significance as to their composition, the old name is still employed. As an example of this custom, one need only mention the employment of the terms, "aristol," "aspirin," "dermatol," "diuretin," "salol," and "urotropin." It would seem that with the official adoption of these preparations, the older names might be left in abeyance.

The illustrations throughout the book are admirable and many of them original with the author.

There is a fairly good, though brief, description of serotherapy, in which a fairly critical statement of the therapeutic value of the different substances employed is given.

Chapter II includes reagents and processes which will be of value to those engaged in laboratory work, both on vegetable and animal products.

One is astounded at the vast number of drugs, many of which have, in later years, been pronounced worthless, included in this work.

Diet for Children. By Louise E. Hogan (Mrs. John L. Hogan). A Complete System of Nursery Diet with Numerous Recipes; Also Many Menus for Young and Older School Children. A Home and School Guide for Mothers, Teachers, Nurses and Physicians. Author of "How to Feed Children," "A Study of a Child," "The Introduction of Domestic Science in the Schools of New York City," U. S. Government Bulletin No. 56, "Timely Hints for Mothers and Nurses," "The Child in Sickness and Health," etc. 160 pp. Indianapolis: The Bobbs-Merrill Company, Publishers.

In this little book, Mrs. Hogan, who is well-known as an authority on the care and feeding of children, has covered the question of diet. In it she tells what foods to give children, and at what times; discusses pure food and its value, and gives a large number of recipes and menus. It is marked throughout by common sense, and should be of great assistance to mothers, nurses and all others who are concerned with the care of children. The point of view is, however, at times that of ten or more years ago rather than of today. In general, we agree with the diet which she recommends, but differ with her in certain respects. It seems to us, for example, that she is rather too much afraid to begin to give meat to children and that she is rather too partial to desserts and cream. These are minor matters, however, and, on the whole, there is little to criticise in the book.

Principles of Diagnosis and Treatment in Heart Affections. By Sir James Mackenzie. London: Oxford University Press.

The preface explains fully the purpose of this book of 250 pages. The contents were originally prepared as lectures for postgraduate students and workers in the cardiac department of the London Hospital. On account of the war, they were never delivered, but are now published in somewhat changed form. Sir James Mackenzie utilizes this opportunity to express his personal opinion in regard to many cardiac problems. The book is not a treatise or a text-book, nevertheless, the whole field of cardiac disease is covered fairly thoroughly. Sir James Mackenzie's work is too well known through his other publications to justify extended comment. In the book under discussion, one gets Mackenzie's personal viewpoint in regard to the significance, both present and future, of the information that is being so rapidly acquired by means of the various instruments of precision in cardiac disease. On this subject, Mackenzie, himself a pioneer and a considerable contributor, can justly speak with authority.

Traumatic Pneumonia and Traumatic Tuberculosis. By F. Parkes Weber, M.A., M.D., F.R.C.P., Lond. London: Adlard and Son and West Newman.

This monograph, reprinted with additions from articles in the *London Clinical Journal* of

July, 1916, discusses the importance of the element of trauma as a factor in the cause of pneumonia and tuberculosis. The first part, devoted to traumatic or contusional pneumonia, reports several cases, and refers briefly to the literature of the subject. The second part treats at greater length of similar relations in tuberculosis. The idea is not new, but it has hardly been so extensively dealt with in previous publications. Logically, there seems little to contradict in the author's contention, and this monograph effectively emphasizes the clinical possibility.

The Biology of Tumors. By C. MANSELL MOULLIN, M.A., M.D., Oxon., F.R.C.S. London: H. K. Lewis & Company.

This monograph is an expansion of the Bradshaw Lecture delivered by the author before the Royal College of Surgeons in 1912. The proposed classification of tumors rests on their biological mode of origin. The first class is due to the sudden awakening of the innate reproductive power of tissues; the second class to failures of detail in carrying out the normal structures of the body. On this basis the author divides all tumors into two great groups, of which the former may be described as truly neoplastic, the latter as representing the limited group of fetal rests or embryonic inclusions. Most interesting is his discussion of conditions that lead to the production of gemmation tumors of the first class. Development or evolution, he believes to be the restraining influence against this process, an influence which may be broken down by adverse chemical or mechanical conditions. His classification is not classic and appears philosophical, rather than scientific. But where all theories are still largely hypothesis, it deserves attention on its own merits.

The Year-Book of the Bureau of Preventable Diseases. By JOHN S. BILLINGS, M.D. Department of Health of the City of New York. Monograph Series, No. 14.

The Department of Health of New York have superseded the publication of their yearly Handbook by this considerable monograph, which describes in detail the procedure of the Department of Health in the supervision of preventable diseases in New York City. It includes a statement of the organization of the department, and of the bureau of preventable diseases, the functions of the bureau, the sanitary code, that is, the authority under which the bureau operates, and its regulations. It gives in detail the rules and regulations of the bureau in its management of infectious diseases, with tuberculosis, including clinics and camps and all institutions for the care of tuberculates under the control of the bureau. The division of epidemiology, an outgrowth of the division of typhoid fever, covers diphtheria, scarlet fever, and such sporadic diseases as spinal meningitis and poliomyelitis. The division of venereal diseases, with a description of the management of animal diseases, and a description of the work of industrial hygiene, conclude the volume. As a complete and clear statement of the execution of sanitary supervision of a large city the book is valuable, not only to those coming in contact with the department, but to all who are concerned with public health administration.

The Organism as a Whole. By JACQUES LOEB, M.D., Ph.D., Sc.D. New York and London: G. P. Putnam's Sons.

In this volume, published in Putnam's science series, Dr. Loeb continues the development and exposition of the mechanistic conception of life and its phenomena, already made familiar through his previous works. In this exposition he correlates many of the facts hitherto observed and described separately, and presents a perspective view of the organism as a whole, tracing its career from the origin of life through the various stages of individual and generic development, through regeneration, adaptation and evolution, to death and dissolution. Of particular interest in view of Loeb's earlier work, are the chapters on fertilization, artificial parthenogenesis, the determination of sex, and the mechanism of Mendelian heredity. The book is well illustrated with fifty-one figures, including a few full-page plates. Whatever one's agreement or disagreement with the author, his monograph is of extreme interest as a contribution to the philosophy of science.

Text-Book of Surgical Operations. Illustrated by Clinical Observations, for Physicians and Students. By PROF. FEDOR KRAUSE, Privy Medical Councillor, Directing Physician Augusta Hospital, Berlin, in association with EMIL HEYMANN, M.D., Chief Physician, Augusta Hospital. Translated into English and Edited for American Readers, by ALBERT EHRENFRIED, A.B., M.D., F.A.C.S., First Assistant Visiting Surgeon, Boston City Hospital; Junior Assistant Surgeon, Children's Hospital; Surgeon, Boston Consumptives' Hospital. In six volumes, Volume II. With 373 illustrations in two or more colors. New York: Rebman Company.

The second of the six volumes of Krause's Surgical Operations contains about 700 pages, and is uniform in binding and general appearance with Volume I. It deals with operative surgery of the mouth, jaws, neck and brain. It is profusely illustrated with 300 cuts and more than as many colored plates.

It will be recalled that this large system of operative surgery is based upon the case method; a brief description of technic is outlined, and the precise procedure carried out in an actual case then follows in detail. While of course this cannot be done in every single instance, it is the plan upon which the whole work is based. The result is vivid and interesting, free from the ordinary machine-like dullness of many older treatises upon the subject.

Nothing has been spared to make the volume completely satisfactory.

A Text-Book of Histology. By FREDERICK R. BAILEY, A.M., M.D. Fifth Revised Edition. New York: William Wood & Co.

This fifth edition of a standard textbook of histology contains no important change in the original general plan and scope of the work. The text, however, has been thoroughly revised and some parts of it rewritten. Some figures have been added and the entire work is now profusely illustrated, with a well-selected series of three hundred and ninety-two text cuts, including one insert diagram illustrating the more important cerebellar connections. The chapter on the nervous system, rewritten for the third edition and revised for the fourth by Dr. Oliver F. Strong, deserves particular commendation. The work should continue to fill its useful place as a textbook for teachers and students.

Wound Infections, and Some New Methods for the Study of the Various Factors Which Come into Consideration in their Treatment. By COLONEL SIR ALMROTH E. WRIGHT, M.D., F.R.S., Consulting Physician to the Expeditionary Force. Being an address delivered before the Royal Society of Medicine, and taken from the research laboratory, attached to No. 13, General Hospital, Boulogne-sur-Mer. New York: William Wood & Company.

A small book of less than 100 pages. Wright considers, discusses and summarizes his views upon wound infections. It is, of course, an examination of the question of antiseptics as compared with physiological methods of dealing with wounds already infected. The question is, what shall we do when we are confronted by an existing inflammatory process? Wright believes in a 5% solution of common salt, with or without the addition of ½ per cent. of sodium citrate. "This brings into play osmotic forces, and 'draws' the lymph out of the walls of the wound by a *vis à fronte.* The sodium citrate is added with a view to decalcifying the outflowing lymph and rendering it incoagulable.

"It may perhaps be allowed to say with regard to this lymphagogic solution—or, rather, with regard to the simple 5 per cent. salt solution, which I find works in most cases equally—that it has in this war proved itself pre-eminently useful. When brought into action upon a dry and infiltrated wound, or a wound that is foul and covered with slough, it resolves the induration, brings back moisture to the surfaces, and cleans up the wound in a way that no other agent does. Applied in gaseous gangrene in the form of a wet dressing to incisions which have been carried down into infected tissues, it causes lymph to pour out of the wounds, and arrests the spread of the infection. And, again applied in gaseous gangrene to an amputated stump in cases where it has been necessary to leave infected tissues behind, it reverses the lymph-stream and draws out the infected lymph—saving life in almost desperate conditions."

Wright further adds that it has in this war proved itself pre-eminently useful. It has been asserted that antiseptics, at least in the present war, have been used by those in the field near the front, whereas the physiological methods and the non-use of antiseptics have been advocated from the laboratories; but it would seem from Wright's little book that there must be exceptions to this statement, and it is certainly most desirable that the use of so simple a method as a five per cent. common salt solution, with or without sodium citrate, should be thoroughly investigated in a dispassionate manner by a large number of competent surgeons under all conditions. It is hard to read Wright's statement without feeling that his arguments against antiseptics are very strong.

A Laboratory Manual of Organic Chemistry for Medical Students. By MATTHEWS STEEL, Ph.D. First Edition, First Thousand. New York: John Wiley & Sons. London: Chapman and Hall.

This monograph, originally compiled as a laboratory guide for medical students, constitutes a practical course in organic chemistry and aims, without burdening the student with a mass of unessential data, to supply the demand for a broader training than was formerly required in experimental chemistry. The text is conveniently grouped into seventeen chapters, and is divided continuously into two hundred and five numbered sections, each representing an experiment. Every right-hand page is left blank for laboratory notes. There are two appendices; the first contains tables of international atomic weight, specific gravity and percentage of alcohol and freezing mixtures of powdered ice and various salts. The second appendix contains a tabulated list of reagents and solutions. There are no text illustrations. Many of the data in the chapter on alkaloids were obtained from Autenrieth's "Detection of Poisons and Powerful Drugs." The manual should be of value to both students and teachers of organic chemistry.

Habits that Handicap; The Menace of Opium, Alcohol and Tobacco, and the Remedy. By Charles B. Towns. New York: The Century Company.

Every physician knows something of the grave dangers from the use of habit-forming drugs, particularly narcotics, and this book gives interesting points of view of this subject from a man who, though not a physician, has had unusual opportunities for informing himself. A person of this sort is sure to run to excess in statement, and this, too, is found in this book—as that in the introduction, that deprivation of the drug means death, and in statements such as that in the great hospitals in London, Paris, and Berlin, he found the physicians ignorant of how to treat cases of alcoholic mental disturbance. Of course, the weakest point of the book is the implied claim that the author's method of treatment of drug addictions is the best method known, if not the only effective one. The endorsement of this method of treatment in the preface by Dr. Richard C. Cabot; that it accomplishes the withdrawal of morphine with vastly less suffering than that entailed by any other treatment or method that he had ever seen, shows the lack of experience of a prominent physician in general practice with methods of treatment for a special condition, and should serve as a warning to others against hasty endorsement of man and methods in fields outside of their special study.

A System for Case-Taking, with Explanatory Notes. By George William Ross, M.A., M.B., Tor.; M.R.C.P., Lond.; and Julian Loudon, B.A., M.B., M.R.C.S., Eng.; L.R. C. P., Lond. Canada: The Macmillan Company.

A brochure of seventy pages, containing a method of case-taking, has been made up by the above authors, and has been accepted for use by the Department of Medicine of the University of Toronto. It consists of nine headings: general registration, complaint, present illness, personal history, family history, initial observation, general examination, interrogation concerning special systems and investigation of special systems. The outline of procedure to be followed under each heading, with definite questions to be answered, is printed on the right-hand pages. On the left-hand pages are printed explanatory notes regarding different points of the examination, elucidating them, and emphasizing whereever necessary. As a comprehensive basis for careful and thorough case-taking, and as a guide for any physical examination, the book can be recommended.

Diagnosis from Ocular Symptoms. By Matthias Lancton Foster, M.D., F.A.C.S., Member American Ophthal. Soc., etc. Rebman and Company.

In this book the author takes up leading symptoms and signs, and works from them to the diagnosis, collecting about the predominating feature all the minor ones that make up the picture of the disease. To do this well and to make such a work of value to the ophthalmologist is, as the author says, "a stupendous task." and we think he may well be proud of his success. The book must be read to be appreciated; no summary can show the industry and ability of the author, and we believe few will read without learning a good deal of value for daily practice. The book is printed in large type on mat surfaced but light paper, and its perusal gives pleasure to the eye as well as to the mind.

The Secretion of Urine. By A. R. Cushny, M.D., LL.D., F.R.S. New York and London: Longmans, Green and Company.

Hardly any member of the series of monographs on physiology which are gradually appearing under Professor Starling's editing will prove more valuable than this one upon the kidney. Even efforts to get reliable information through textbooks upon this organ are crowned with disappointment and confusion, but only those who have attempted to plunge into kidney literature can realize the mass of contradiction and worthless investigation which surrounds the subject. It is a great achievement, and one which could only have been accomplished by an investigator very prominent in kidney work, to have struggled through this mass of material, adequately separating wheat from chaff, and appending acute critical discussion to practically every phase of the subject.

A summary of the anatomy and histology of the kidney is followed by chapters which carry one through the kidney metabolism, theories of renal secretion, functions of the tubules and glomeruli, mechanical factors in secretion and chemical factors in secretion. Then follow chapters upon diuretics,—the action of which has been so indissolubly bound up with renal physiology, glycosuria, albuminuria, and notes on nephritis, and other renal disorders in their bearing upon the normal physiology of the organ.

If the reader has made no excursions into kidney literature, he will be apprised of the magnitude of Professor Cushny's task by the appended bibliography, which is carefully indexed for the text, and adds markedly to the value of the book. Indeed, one finds acute comment upon almost every one of these many references,—comments which cannot fail to save time and energy for every worker in the field. Well-chosen diagrams and tables illuminate a text which cannot be too highly commended.

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THE CAUSES OF EYESTRAIN.

The increase in the use of lenses among civilized peoples, because of visual defects or disturbances, has been variously ascribed to poorer visual development among the civilized, as against aboriginal peoples. This hypothesis has not, however, been substantiated by investigations into this matter. The apparently better vision of the aborigines is due to their ability to utilize the other senses and other aids in assisting them to interpret visual perceptions, rather than to any inherent visual superiority. That they are not sufferers from the many reflex effects of the use of the eyes—eyestrain—is because they are not called upon to use their eyes in the same manner or in the same degree that modern civilization and technical development demand. Very few eye defects give any trouble until the eyes are used for close or detailed -application of a fatiguing character, or unless the illumination is poor, or badly directed or distributed,—whether natural or artificial. Even children with high visual defects are not likely to suffer the effects until they attempt the close application required of them at school. And in this respect it is the far-sighted or those with poor general or ocular musculature who suffer first and suffer most. The near-sighted are quite in their element in near work. They have the added advantage of magnification that their near-sighted eyes give them. Even with high degrees of myopia, it is remarkable how little discomfort they suffer and how well they can do work that requires close application. Of course, they suffer the embarrassment, rather than real inconvenience, of being unable to negotiate distant points. Near-sighted people suffer least from eyestrain. But even very mild degrees of hyperopia will often cause profound reflex disturbances, out of all proportion to the degree of the defect. It is for this reason that any case of hyperopia must be detected early and appropriate lenses applied. For high degrees of hyperopia, even correction is not remedial. Vocation must be chosen that close application of the eyes may be at a minimum.

The eyestrain due to muscular fatigue of the ocular muscles is more nearly a condition accompanying civilization than any other condition. Lack of muscular development, sometimes congenital, to be sure, but usually the result of sedentary life or occupation, leaves the ocular muscles underdeveloped and unable to maintain the muscular balance of the eyes or of the accommodative apparatus. Fatigue and all the reflex symptoms that go with it must be the natural result. The muscular cause of eyestrain can be distinctly limited by inculcating the necessity for proper physical exercise and physical development in the child, as well as in the adult. Perhaps the universal military training advocated at present will be the means of removing this one evil of civilized life—lack of muscular development. For eyestrain the result purely of muscular underdevelopment, neither lenses nor muscle treatment locally is of permanent benefit. Treatment must be general, looking toward an increase in the general tone of the body, and particularly of the muscles. Because so many of the neurasthenic symptoms are of reflex ocular origin, it would seem wise in making vocational placements, in the young particularly, to take into consideration the muscular and refractive conditions of the eye, in order that those unfitted for long-continued near application of the eyes shall not be placed in unsuitable occupations.

But while these causes of eyestrain apply only to individuals with these developmental or muscular conditions, any one may have his eyes put under a strain by such extrinsic conditions as illumination. Numerous investigations into the lighting conditions of work and schoolrooms have shown under what poor conditions of illumination most people work. Where the degree of illumination is adequate, the distribution and the protection of the light are still questions for consideration. Inadequate, ill distributed or unprotected illumination places an extra burden upon the visual integrity. Eyes become easily fatigued, reduce their efficiency and cause the many reflex symptoms of eyestrain. Probably the most harmful of the illumination defects is badly protected illumination. Illumination that glares directly into the eyes, without any protection, is most injurious. The source of light must always be protected against glare. It is the object of vision that needs illumination, rather than the eyes themselves. In the matter of the lighting of factories and public buildings of whatever character, the illuminating engineer is as important a factor in construction as the construction engineer. Proper direction, distribution and protection of the sources of light are, besides, matters of economy. Due regard for the location of desks, tables, machinery, etc., with regard to the source of light, will give the best and most economical consumption of light, and will avoid the baneful effects upon the eyes of bad illumination.

ANNUAL REPORT OF THE PHILIPPINE HEALTH SERVICE FOR 1916.

The Philippine Health Service for 1916 presents a most favorable report. The routine work of the Service was carried on in a satisfactory manner, real interest and enthusiasm being manifested by the various officers and employees. With the exception of cholera, no epidemic diseases were present in serious form. Cholera was present throughout the year, but did not assume serious proportions until May, when, in spite of all efforts to control it, it began to make its appearance in various places. A total of 12,847 cases and 7986 deaths occurred in the Islands during the year. Of this total, 1214 cases and 513 deaths occurred in Manila, and 11,637 cases and 7473 deaths occurred in the various provinces. At the end of the year, Manila was almost entirely free from cholera, and only a few scattered cases existed in the provinces.

Extraordinary efforts were put forth to control the cholera epidemic, but as the situation became serious, all that could be done was to hold the disease down to a minimum and eradicate it as soon as possible. It was quite conclusively proved that the epidemic was spread by cholera carriers, and kept going by them. Record is now being kept of all persons who have recovered from cholera and are known carriers of the disease. These will be examined from time to time, to learn as far in advance as possible of an impending epidemic.

The work of the School of the Bureau of Science, and others, has demonstrated quite conclusively that when a cholera carrier is given a severe purge or when he ingests food or other substances which have the effect of producing a severe purge, the carrier frequently is converted into an actual case. The usual history of the first case of cholera in a community is as follows: No cholera has been present for months, perhaps. An individual, usually one of the very poor class, has gone to work or fishing early in the morning, and has been exposed to the rain and has been thoroughly wet all day; upon his return home, completely exhausted, soaked to the skin, and very hungry, he eats excessively of any food that happens to be in the house, as often as not rice and fish that very probably have been cooked in the morning and kept in a covered vessel all day; that night he has an attack of "cholera morbus," with vomiting and purging, cramps, etc., and the next day has cholera and probably dies; this is the usual focus from which the disease spreads throughout the town. Though not every person who has an experience similar to the above has cholera, it is believed that a large per cent. of the cholera carriers who have such an experience are likely to develop the disease.

At the time of the recent outbreak of cholera in Manila, it was discovered that an unusual quantity of shrimp and other small fish had appeared in the local market. These soon began to decompose, and the sanitary inspectors ordered their condemnation; the fish venders consequently lowered their prices to avoid loss, and large quantities were bought by the poorer classes; many fell ill of cholera, and the epidemic raged until the sale of shrimp and shell fish was prohibited. At once the disease abated.

Early in the outbreak it was decided to establish temporary emergency hospitals for cholera, as a means of removing cases of infection to a common center where they could be effectively controlled. There was some objection at first, as the people did not take kindly to hospitalization. After the successful treatment of several cases at Hagonoy, Bulacan, however, a voluntary influx of cases began, and as a result the epidemic was promptly controlled, with an average mortality of about 45%, as compared with 75-80% in previous outbreaks. Emergency hospitals sprang up wherever cholera appeared, with excellent results; the people were convinced, and voluntarily reported themselves or their sick, all over the Islands. In Manila, over 50% of all cases presented themselves.

Two sanitary commissions—all that the Service has been able to support—have made a study of conditions in ten towns of the Islands, and have learned many things concerning the mortality rate. As a direct result of their efforts, the people have learned that many diseases hitherto considered inevitable, are preventable and curable. Sanitary ordinances have been enacted and enforced, especially those regarding sewage and waste disposal. Over fifty women's clubs have been formed, dedicated to the prevention of infant mortality, to better housing for the people, and to the inculcation of better balanced diets. With this end in view, almost 15,000 families agreed to maintain vegetable gardens, with the idea of adding protein-producing vegetables to the almost universal diet, among the poorer classes, of rice and fish.

The researches of the sanitary commissions indicated early in their existence the necessity for a better house than the average Filipino now possesses. The average house now in use is made of nipa and bamboo, affords inadequate shelter from the elements, is too small for the average family, is a continual expense on account of its frail nature, and is perpetually in danger of destruction by fire, due to its tinderlike makeup. The problem has been studied, and the commission now issues a statement that it is possible to build a house that is sufficiently large for the average family, that is neat in appearance, durable, fireproof, and sanitary, for the average cost of about $250 to $300 U. S. currency. These houses are to be built of materials locally available, and on a very simple plan of construction.

Statistics show that there are about 4466 insane in the Islands, and of these, hardly 1000 are under proper restraint and care. The great majority are cases of the manic-depressive type of insanity, probably due to chronic intoxications resulting from chronic infections, as fevers, malaria, etc., and to prolonged and repeated food poisonings, due to improper and poorly balanced diets. When proper care and food are received, many recover.

The leper colony at Culion averages about 4300, and many improvements have been made there of late. The lepers are taking more interest in life than ever before, and the colony does much to care for itself. An ice plant has been constructed with leper capital, all the fish used are caught by the lepers, and almost all the vegetables used are raised by them. Practically the only articles sent to the colony now are clothing and rice; groceries are sent to the Culion store and sold to the lepers at cost.

There were few cases of actual smallpox during the year, but the number of cases of varioloid, practically without deaths, has increased. This is interpreted to mean that the immunity obtained by the general vaccination begun in 1905 and 1906 has begun to wane. Revaccination will be started at once, and it is hoped to establish immunity once more before that formerly gained is entirely lost.

THE SCOPE OF MENTAL HYGIENE.

It is a fallacy to view the subject of mental hygiene as a separate scientific entity distinct from general hygiene. It would, perhaps, be better to look upon mental hygiene as the initial and essential step toward general hygiene. Certainly it is the pivot around which all notions of hygiene must revolve. It is essentially necessary to understand and to carry out the principles of mental hygiene in order to develop the kind of mind that will be receptive to the dictates of general hygienic principles. With the development and the conservation of the mind, whether as a matter of course in evolution or as the result of positive effort in study and research, has come the eradication of diseases previously scourges of mankind, and which, undoubtedly, will be followed by still further progress in this direction. But whether it is a question of progress in general or in mental hygiene, large results must come from the efforts of the entire community, rather than by individual effort.

The first necessity in mental hygiene, as in general hygiene, is the exclusion of foreign sources of mental disease and the isolation and segregation of those found in a given community. In a measure, even mental disease is "contagious" indirectly from the influence association with mental cases has on immature minds, but perhaps more directly by the tendency to transmit mental disease to the offspring. Moreover, there are certain diseases and conditions, almost entirely preventable, which seem to have a very marked tendency to produce mental disease in the person concerned and then in the offspring by hereditary transmission. In this respect, alcohol and syphilis are, of course, the most important factors. The prevention of alcoholism and syphilis would be the greatest factors in the promotion of mental hygiene and in the conservation of the mind. It is estimated that 70% of the mental conditions are hereditary in nature. This would seem to indicate that, in spite of the enormous number of insane and defective, very few of them are accidental infections, so to say, but are, most of them, due to bad ancestry.

Of those not traceable to heredity, the cause of the mental disturbance can be found in the lack of attention in the very young to such conditions as environment, food, exercise, preventable illness, etc.,—the same conditions, practically, that officiate in the causation of physical conditions. Besides, the impressionistic condition of early life makes it essential that only those ideas be allowed to appear before the child that will arouse healthful thoughts and actions. The depressing, the maudlin and the exciting must be religiously kept from the immature mind. Instead, their places must be taken up by healthful play, exercise, amusement, reading. The mind, as the body, must be carefully guarded from trauma of any kind. The mind must be exercised but not injured. When the child has a bad heredity these elements must receive especial attention in order to anticipate injury, just as a frail child must be more carefully guarded than the normal. Suitable occupation must be determined early, and proper vocational training given in order to prevent economic failure and the depressing effect it has on the mind. Vocational guidance, based on mental and physical capacity and inclination should be the foundation of the future industrial life of the child. No opportunity must be overlooked to encourage and to educate the younger generation in wholesome interests and wholesome thoughts, and to discourage laziness, dreaming and introspection.

Much of the incidence of mental disease and defect can be reduced by proper education, even when the heredity of the individual is bad; more of it can be prevented by the eradication of preventable diseases and abuses, and much more by segregating and preventing marriage and propagation by defectives and those suffering from alcohol, syphilis, and like conditions, and finally by a more rigid exclusion of alien sources of disease, disease tendency, and inferiority.

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INDICATIONS FOR LOCAL ANESTHESIA.

As a general routine of operative clinics when there exists none of the accepted contraindications to general anesthesia, and where the operation is sufficiently major to warrant rendering the patient unconscious, general anesthesia must still remain the most feasible method. But while general anesthesia renders the patient unconscious and free from pain, it does not render the organism free from the shock to the nervous structures engendered directly by reason of the operative hurt to the tissues. The sensibility of the nervous system and its centers controlled, the production of shock is not avoided by rendering the patient unconscious with the general anesthetic. In reality, it is only with local anesthesia that these conditions may be anticipated. The Crile method of anociassociation is the outgrowth of this circumstance. Unless the seat of the operation, where the hurt is administered to the tissues and to the irritable nerves, can be freed from communication with the general nervous system for the period of the operation, shock and the other bad by-effects of the operation will continue in spite of the anesthesia, the anesthetic, or the quality of the anesthetist. The injection of the local anesthetic into the site of the surgical hurt renders it impossible for the shock of the operation to be transmitted to the higher centers. When, then, the general anesthetic is administered, there is the advantage of unconsciousness together with the freedom of shock.

Moreover, it is quite well understood that, no matter what general anesthetic is administered, it is highly toxic to the organism. Many of the post-operative complications, such as albuminuria, acidosis, etc., are directly due to the anesthetic. Of course, some anesthetics are better than others. At best, there is only a choice between evils. One anesthetic may be contraindicated in some conditions and under certain circumstances, another in other conditions and circumstances, but all of them have distinct contraindications, often hard to determine. Such mechanical conditions as the presence of mucus, congestions, and such diseases as nephritis, diabetes, sepsis, suppurative thoracic conditions and the like all make the administration of a general anesthetic dangerous. Of course, there are untoward effects and dangers from the use of local anesthesia. Sudden death is not unknown. Yet local anesthesia is becoming more and more popular in major operations, and in operations where local anesthesia would never have been dreamed of only a short time ago. There is hardly any major operation which cannot be performed under local anesthesia. In minor operations there is hardly any excuse for rendering the patient unconscious and subject to all the after-effects, dangers and annoyances of a general anesthetic. Local anesthesia often has the peculiar anomaly that the administration of the local anesthetic is out of proportion in point of time to the operation itself. But this is not a valid objection against it. Local anesthesia will not overcome spasm of the abdominal muscles, nor can local anesthesia be administered in mutilating, violent injuries where rapid surgical measures of an emergency character are indicated. In the latter instance it was always understood that, no matter how much the patient was in collapse from the shock of the injury, the general anesthetic had a therapeutic effect in relieving the shock, in the same way that the methods of anoci-association would anticipate it in surgical operations. However, the added shock to the patient of the remedial surgery would tend to overcome any benefit that the general anesthetic would bring about; but in such cases there is no alternative but to give the general anesthetic and operate, regardless of the question of the anesthetic or the operative shock. Whatever the indications, however, children and very nervous individuals are not good subjects for local anesthesia.

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ANNUAL REPORT OF THE BOSTON MEDICAL LIBRARY.

THE Boston Medical Library has issued its forty-second annual report for the year of 1917. Several innovations have been made during the year. It has been voted that books shall not be reserved for a longer period than forty-eight hours; duplicate books and periodicals may be given in exchange to other libraries only for similar material needed by the library. It has been decided to keep the library open only three evenings a week, instead of five, and a further curtailment of service may be necessitated by the shortage of coal.

The Committee on Membership and Elections reported that the Library had gained 4 Fellows and 24 Associates, and had lost by death, resignation, and dropped from the rolls, 20 Fellows and 12 Associates, making a net loss of 4 members. The total membership on January 1, 1918, consisted of one Honorary Member, 11 Life Members, 464 Fellows, and 328 Associates, making a total of 804.

The Librarian states that very few new books and periodicals have been received from Europe since last year. Many of the subscription periodicals have been held up in Rotterdam, and there is some question of their being allowed to leave Holland until after the war. Several large collections of books and periodicals, principally in foreign languages and on subjects in which the library has been deficient, have been purchased in this country the past year; among them are books on the examination of food, beverages, and drugs, toxicology, handwriting of the insane, also some valuable monographs and sets of unusual journals. The large collection of autograph letters and autographs, which had not been looked over or put in order for years, has been arranged in chronological and alphabetical order, so that they are now readily accessible.

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WAR RELIEF FUNDS.—On March 15 the totals of the principal New England war relief funds reached the following amounts:—

Halifax Fund	$695,779.75
Belgian Fund	664,538.57
French Wounded Fund	328,566.94
Armenian-Syrian Fund	288,150.59
Jewish Fund	285,532.53
Italian Fund	151,021.64

MEDICAL NOTES.

AMERICAN POSTURE LEAGUE.—At the annual meeting of the American Posture League, which occurred March 9, closing with a dinner for the Honorary Boards at the Aldine Club, the following officers were elected: Miss Jessie H. Bancroft, president; Captain Frederick R. Green, vice-president; Dr. Henry Ling Taylor, secretary; and Dr. Percy W. Roberts, treasurer.

The reports for the year showed a great activity in relation to war conditions, and a large demand on the resources of the American Posture League, as a national health organization, indicating a quickened public conscience on the subject of health since the physical examination for the draft Army.

The Technical Committees of the League reported completed work for the year on factory and school seats, shoes and other articles of clothing for men, women and children, besides a large educational service.

SIXTH CONFERENCE OF INDUSTRIAL PHYSICIANS AND SURGEONS.—The Department of Labor and Industry will hold its Sixth Conference of Industrial Physicians and Surgeons in the Hall of the House of Representatives at Harrisburg, on April 9, 1918.

The program to be presented is of exceptional interest and timeliness. At the morning session there will be brought up the subject of industrial health hazards arising out of the war emergency.

The afternoon session will be devoted entirely to the subject of workmen's compensation. The question of hernia in its relation to the compensation law will be gone into thoroughly, and the possibility of amendments to the present Pennsylvania Workmen's Compensation Law will be discussed.

Copies of the completed program may be obtained on request from Dr. Francis D. Patterson, Chief, Division of Industrial Hygiene and Engineering, Third and North Streets, Harrisburg, Pa.

THE "QUADERNI D'ANATOMIA."—The *Lancet* makes the following interesting statement about the "Quaderni d'Anatomia," by Leonardo da Vinci:

"The 'Quaderni d'Anatomia,' by Leonardo da Vinci, has had a fate stranger even than that reserved for his other works. Written early in the sixteenth century, almost 300 years were to come and go before any serious reference was made to it, while another 100 years were to pass before it was published in an adequate or complete form. The interest of the work, which formed the subject of two recent Arris and Gale lectures by Professor William Wright, lies largely in the fact that it provides the spectacle of certainly one of the ablest and most versatile men who have ever lived, attempting the solution of some of the main problems of anatomy and physiology at a period when the systemic circulation, osmosis, oxygen, and the microscope were all unknown. In addition to these grave defects in his knowledge, Leonardo, like all his contemporaries, was further handicapped by the inheritance of two fundamental errors—viz., the belief that the arteries contained free air and that the interventricular septum of the heart was penetrated by narrow passages through which the blood passed from the right ventricle into the left. The nearest approach which Leonardo made to the elimination of the first of these errors was that he in one passage denied that free air entered the heart from the lungs, and wrote of the blood in the lungs being merely refreshed, thus returning to the correct Aristotelian view. Leonardo's main contributions, had the publication of his work not been delayed, would have included a more precise description of the interior of the heart and large vessels than had ever been supplied before, thanks, no doubt, to his skill in draughtsmanship, and a singularly correct account of the action of the thoracic and abdominal muscles in respiration. The book was intended as a textbook for students, and it is of interest to find how modern were his methods, as, for instance, the representation of opaque parts as transparent so that the relations of underlying structures may be observed, the pouring of wax into hollow viscera in order to obtain casts of their interior, the study of comparative anatomy, and in one instance, at least, the practice of vivisection. Although Leonardo's work cannot be said to have had any effect on the progress of anatomy, it must always remain an interesting contribution, while the question as to what its effect might have been can never be finally decided."

THE USE OF HOG SERUM BY VETERINARIANS.—Criticism of the State Department of Animal Industry was voiced at a recent hearing before the Legislative Committee on Agriculture, on a petition of Frank R. Austin of Lynn, that on application of any registered veterinarian, the department shall furnish him at cost with hog serum in such quantities as he may require for his practice. Mr. Austin charged that the State Department has a monopoly on the serum, that it sends its agents to treat diseased hogs, and that there are delays involved which often cause serious losses to hog owners. Dr. John F. Winchester of Lawrence, Dr. William M. Simpson of Malden, and Dr. C. H. Playdon of Reading all argued that they should be allowed to apply the serum, and that the department ought not to stand in their way.

James E. Dodge, superintendent of the Hood farm in Lowell, led the opposition. He is a breeder of swine, and opposed allowing veterinarians the power to administer serum for hog cholera. Edward A. Cahill, of the Department of Animal Industry, declared the improper use of the serum to be the cause of the loss of hundreds of thousand of dollars among hogs in other States. He said that the average veterinarian was not competent to its use. He stated that out of 500 veterinarians in the State, only four have asked for the right to use the serum, and that not a single hog owner had asked that the right be given to veterinarians.

WAR NOTES.

An Appeal for Roehampton Hospital.—Lieutenant-General Sir Francis Lloyd has requested that the following appeal for Roehampton Hospital be given publicity in the columns of the Journal.

"In 1915 we made an appeal for funds to establish Queen Mary's Convalescent Auxiliary Hospitals at Roehampton for Sailors and Soldiers who had lost their limbs in the war. The response from all parts of the Empire was most gratifying, and with liberal grants made by the British Red Cross Society and the National Relief Fund, the Committee were able to establish the Hospitals on a sure foundation, and to extend vastly the original scheme by the erection of additional wards, training workshops, recreation rooms, factories for artificial limbs, etc.

The work at Roehampton is so widely known that it is unnecessary to describe it, but it may be mentioned that up to December 31 last over 11,500 officers and men (including a large number from our Overseas Dominions) have been admitted to the hospitals, supplied with artificial limbs (provided by the State) and taught how to use them; large numbers have also been admitted for readjustment and renewal of their limbs.

Twenty-three hundred men have been found good posts through the Employment Bureau attached to the hospitals, and 7000 men have been returned to their old employment or passed on to local committees with information necessary to secure them a fresh start in life.

The present accommodation is totally inadequate to meet the increasing demands made upon it, and serious consideration must now be given to the future.

The majority of our limbless men are quite young, cheery and full of hope about their future, but much depends upon the usefulness of their artificial limbs, which always require readjustment owing to the shrinking of the stump. Also at intervals repairs and new limbs are necessary. Consequently, there will be need of Roehampton for the next forty years.

Scotland, Ireland, and Wales have recognized this want, and by voluntary effort have established permanent fitting hospitals for dealing with the problem. It is felt that the need here has only to be known, and England will wish to do the same for her gallant men who are maimed for life.

A generous conditional offer has been made by the owner of Roehampton House, Mr. Kenneth Wilson, by which it is hoped that the house and grounds may be purchased and the great work continued there without interruption after the war, but if this is found to be impossible, funds will be available to purchase another suitable place.

We earnestly appeal for £100,000, not only to extend the present scheme but to found a permanent 'Roehampton,' where our men can always return to have their artificial limbs readjusted and renewed, and we feel sure that this appeal to make adequate provision in the future for the limbless men who have served their country by sea, land, and air will not be made in vain. No donation will be too small and none to large.

Cheques and postal orders should be addressed to the Hon. Treasurer, Queen Mary's Auxiliary Hospital, 12, Little College Street, Westminster, S.W., marked 'Roehampton,' and crossed Lloyds Bank, 222, Strand.

Francis Lloyd,
Lt.-Genl., Chairman,
M. E. Gwynne Holford,
Charles H. Kenderdine,
Hon. Treasurer,
Kathleen Falmouth."

Explosive Action of Bullets.—Herman Küttner (*Muench. med. Woch.*, August 14, 1917, abstracted in a recent issue of the *Lancet*), consulting surgeon in the German navy, has drawn attention to the fact that the explosive action of projectiles in the body is not confined to the rifle bullet. This effect of the rifle bullet had in recent wars been the cause of numerous mistakes and false accusations. Küttner recognized that fragments of shells and bombs may inflict a single wound of entry and numerous wounds of exit. He has seen a whole series of such cases, and he believes that they are not rare. He has seen not only single wounds of entry and multiple wounds of exit inflicted by shell fragments, but with the x-rays has demonstrated the presence of many fragments of shell in the body, though there was only one wound of entry. He reproduces photographs of two metal boxes for holding a gas mask outfit which had been struck by fragments from an aerial bomb. Both boxes show a single hole of entry, while on the opposite side there were many large and small holes of exit. An analysis of the splinters from the bombs revealed no intrinsic explosive qualities, only nickel molybdic steel.

Investigation of Trench Fever Begun.—Sixty enlisted men of the United States Sanitary Corps, all from New England, are now serving as hosts to normal or infected lice, or have received injections of blood from soldiers known to have been suffering from trench fever. The organism producing the fever has not yet been discovered by microscope, and an investigation is under way to discover and control it. Trench fever heads the list of fevers among the British troops, and although it is not fatal, it means an absence of six to eight weeks from the ranks. Scarcity of physicians in the British Army prevented the Royal Army Medical Corps from studying the cause of the disease. The American Red Cross decided to undertake a survey based on the yellow fever investigation in Cuba.

With the approval of General Pershing, a call for volunteers was made, and virtually every member of the 101st, 102d, and 104th Field Hospitals and the 101st, 103d, and 104th Ambulance Companies offered to submit to the experiment. Sixty men were selected, and were quartered in a British base hospital, with a complete laboratory equipment, and everything necessary to trace the transmission of the parasites causing the disease. There the effect of the injections received is being observed.

Need of Surgical Dressings.—The New England Surgical Dressings Committee, now operating as an auxiliary of the American Red Cross, issues an appeal to the public for $30,000, to be used within the next three months for the purchase of material to be made into surgical dressings. Although this committee is producing over 1,000,000 dressings a month, the demand is so enormous that it desires not only to continue the present product, but to increase shipments to meet the necessities of armies in the field.

The appeal follows:

"The Surgical Dressings Committee once more asks your help. The public has been most generous in its support, but the great increase in the number of dressings produced and shipped makes it necessary to ask again for more money.

The committee has made every endeavor to supply more and more dressings, the need for which grows constantly. The number produced has risen from 990,712 sent during the month of August last to 1,314,000 sent during January. Materials cost more than they did six months ago. Obviously this increased production requires more money.

Some of the branches have raised their output beyond their capacity to raise money. The workers are anxious to keep on increasing their product. They should receive from this committee the financial assistance they require to enable them to do so.

The committee has been fortunate in being able to supply the Red Cross with some of the dressings they have from time to time needed. The cost of these does not constitute any part of the increased expenses, for they are paid for by the Red Cross. Neither are they included in the 5,800,000 dressings shipped during the past six months directly to Europe, for the use of the United States Army hospitals and those of our Allies. The need for them is far from being met, even by the large number that has been sent. It is the desire of the committee to stimulate production still further, and to increase the shipments as rapidly as possible. We need at least $30,000 for the next three months' expenditures, and we appeal for assistance, in the confident belief that the supply of dressings for wounded soldiers will not be allowed to fall short, even though the demands of the war are a heavy burden on every one.

Checks may be made to the order of the Surgical Dressings Committee and sent to the Old Colony Trust Company, 17 Court Street, Boston.

John W. Elliott, M.D.,
Margaret D. Porter,
Elizabeth Cabot Lyman,
Executive Committee."

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending March 9, 1918, the number of deaths reported was 299, against 278 last year, with a rate of 19.88, against 18.77 last year. There were 42 deaths under one year of age, against 38 last year.

The number of cases of principal reportable diseases were: diphtheria, 71; scarlet fever, 32; measles, 162; whooping cough, 40; typhoid fever, 1; tuberculosis, 50.

Included in the above were the following cases of non-residents: diphtheria, 11; scarlet fever, 5; measles, 2; whooping cough, 1; tuberculosis, 6.

Total deaths from these diseases were: diphtheria, 6; measles, 5; whooping cough, 4; tuberculosis, 26.

Included in the above were the following nonresidents: diphtheria, 5; measles, 3; whooping cough, 4; tuberculosis, 24.

Hospital Bequests.—By the will of the late Mrs. Charlotte M. Fiske of Boston, the Free Hospital for Women at Brookline and the Boston Home for Incurables each receives a bequest of $5000.

The will of the late George Von L. Meyer, of Hamilton, Mass., contains bequests of $2500 each to the Boston Lying-in Hospital, the Massachusetts General Hospital, and the Huntington Memorial Hospital, Boston.

Diphtheria Death Rate.—Eight out of every 100 persons sick with diphtheria in Massachusetts die. This is by far too high a death rate, and every precaution should be taken to guard against the disease. The early calling of a physician in case of diphtheria, and the prompt administration of diphtheria antitoxin in sufficient amounts will decrease this fatality rate at once. The following methods for prevention of diphtheria are advocated by the State Department of Health of Massachusetts.

1. Isolation of diphtheria carriers and all clinical cases of diphtheria on the appearance of the first symptoms of the disease.
2. Culturing of families, schools, institutions, and other contacts.
3. Immunization of all contacts with diphtheria antitoxin, using 1000 units.
4. Use of the Schick test in families, schools, and institutions.
5. Active immunization with toxin-antitoxin of those individuals who prove to be susceptible to the disease by the Schick test.

Isolation of cases, culturing of contacts and immunization by antitoxin have been carried out for several years. This immunization is fleeting and protects the person for only a few weeks, but is very efficient in checking outbreaks of the disease. The Schick test and active immunization with toxin-antitoxin enables the health officer to locate the persons who are susceptible to the disease, and to immunize these persons with toxin-antitoxin. This immunity in practically 95% of all persons so treated will last for years.

Miscellany.

MALNUTRITION AMONG SCHOOL CHILDREN. RESULT OF A RECENT INVESTIGATION.

The Bureau of Child Hygiene has just completed a survey of 171,691 school children in the public schools of the Borough of Manhattan. This number represents all of the children who were in attendance at school at the time the survey was made. It is, however, far below the registration figures for the borough, owing to the facts that the survey was made during intensely cold weather and many children were kept out of school at that time. It is believed, however, that the survey represents very accurately the general physical condition of the children. Indeed, the fact that these children came to school while other children remained at home would seem to show that they were rather hardier, from a physical standpoint, than the children who were not examined.

This survey was made for the sole purpose of determining the condition of nutrition of these children. The Dunfermline scale was used. No. 1 means a child who is perfectly normal from the nutritional point of view. No. 2 means a child who is in passable condition, that is, one who is not perfectly normal but who does not yet have the stigmata of undernourishment. These are the so-called "borderline cases" and any pronounced change in their living conditions would undoubtedly have a distinct effect upon their physical condition. No. 3 indicates a child who is distinctly undernourished, who bears the stigmata of malnutrition and who needs immediate supervision and readjustment of life and environment. No. 4 represents a child so seriously undernourished as to need immediate medical attention; in fact, a case of pronounced malnutrition or marasmus.

Of the children six years of age, 22.5% were undernourished. This undernourishment increased in percentage up to nine years of age where 25.2% were found undernourished. Then followed a gradual decrease up to the age of 16 years where only 12.1% were found undernourished. The general proportion of actual undernourishment for the borough was 21.6%. Previous surveys made in other boroughs and statistics of undernourishment on record in the department pertaining to the children of these boroughs show that conditions are just about the same as in the Borough of Manhattan.

It may safely be assumed that the figures found in Manhattan are applicable to the other boroughs. Applying them in this way to the total school registration of about one million children in the public and parochial schools of New York City, it is probable that 17.3%, or 173,000, are in normal condition as regards nutrition, 61.1%, or 611,000, are passable or borderline cases, 18.5% are seriously affected with malnutrition and 3.1% are in a bad stage.

It was not found that nationality played any important part in the consideration of the prevalence of undernourishment, although it is of interest to note that of the Italian children examined, 28.7% were found undernourished. These Italian children comprised 23% of the total number examined. The children from Russia and Poland, who comprised 26% of all the children examined, were found undernourished in 19.8% of the cases. The figures for the other countries have no particular significance, but range generally from 17% to 20%.

It should be distinctly understood that these children indicated as undernourished are not actually starving. According to Dr. S. J. Baker, under whose direction this investigation was made, these children are undernourished as a result of long-continued under-feeding or wrong feeding. She calls attention to the fact that this condition has been increasing in seriousness for the last year and a half and has resulted mainly from the fact that the increase in wages has not kept pace with the decrease in the buying power of the dollar for food. It has been shown that during the past few years wages have increased an average of 18% while the buying power of the dollar for food has decreased about 62% during the same period.

Children are always the first in any community to react to any environmental changes or conditions which pertain to hygiene and food. Investigations have shown that large numbers of children are being fed on tea or coffee or beer or wine with bread; that milk is used sparingly, if at all, and that the proper type of food for children is seldom used. The condition is one that should be met not by charity or philanthropy. It can be met, however, in two ways: First, to help the mothers of the city to understand how they may, within their limited incomes, purchase and prepare proper food for their children, and, second, to make available a daily meal for all children in the city at a price they can afford to pay. Such a meal could easily be provided through the school lunch system and should be available for all children of school age and pre-school age, not only during the school year, but also during vacations.

* * *

CHILDREN FIRST.

"The results of underfeeding or indiscriminate food substitution in childhood are startlingly shown abroad as a result of the war, and are beginning to be evident in our own great cities"; and "milk has no substitute in the diet of the child." These and other unqualified statements of the importance of guarding the milk supply to prevent the physical deterioration of American children during the war are scattered through the latest report issued by the Children's Bureau of the U. S. Department of Labor and entitled, "Milk, the Indispensable Food for Children."

This report, with its striking figures showing a decrease in the amount of milk now available and in the amount which is finding its way to the children in poor homes, has special interest in connection with the campaign to save 100,000 lives of babies and little children during the second year of the war. It not only emphasizes the fact that children who are deprived of milk cannot thrive properly, but it analyzes the changes in the production and export of dairy products during the war, and shows the necessity of public action.

"The nourishment of our children is the first duty of the nation. Since milk and milk products are a vital necessity for children, for nursing mothers, and for the sick and wounded, the public should be made to realize that the children's need for dairy products should be assured."

England and Italy have regulated the sale of cream and curtailed the use of butter, in order that their child population might receive the more adequate and economical nourishment offered by whole milk. Germany, early in the war, provided that the adult civilian population might have milk only after the needs of children, mothers, invalids, and the army were met.

The report discusses the various forms in which cows' milk may be used for children. For the young baby, it says, there is nothing so good as mother's milk.

"Never before in the history of civilization has it been so urgent a matter that every child should have breast milk for as long a time as possible, in order that every child that survives birth may have the best chance for life and health."

But for children under two, other than those breast fed, and for older children, the report states that cows' milk is an absolute necessity if disease and death are to be kept within bounds, and if the coming generation is to survive and to sustain the national standards. " 'Children first' should be part of the national food program."

"It is the duty now of every individual community to see that its children have milk of good quality and in sufficient amount to assure their normal development. To do this the price of milk must be controlled or fixed, and the milk supply to infants and children carefully safeguarded. The malnutrition of our children was, even before 1914, a serious national problem and one demanding urgent attention. Poverty and ignorance of dietary essentials have been ever-present factors in the malnutrition of the young, and war conditions cannot fail to increase the gravity of the situation and the difficulties of maintaining the health of the nation."

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HYGIENE AND SANITATION IN JERUSALEM.

In the issue of the *Lancet* for February 23, 1918, Dr. E. W. G. Masterman presents a valuable account of Jerusalem from the point of view of health and disease, from which the following abstracts seem of interest:

"Jerusalem lies some 2400 feet above the level of the Mediterranean and 3700 fet above the Dead Sea. The site is largely shut in by higher mountains. The older parts of the city are built upon a vast accumulation of rubbish, the débris of previous cities, in places over 100 feet deep. Modern Jerusalem has in normal times about 80,000 inhabitants, over two-thirds being Jews, most of whom depend largely upon charity. During the last thirty years there has been a rapid growth of suburbs to the north, northwest, and west.

As Jerusalem is inhabited by representatives of all the nations of Christendom, is visited annually by thousands of tourists and pilgrims from all parts, and is a 'Sacred' City in the eyes of Christians, Jews and Moslems, its sanitary condition cannot continue a matter of indifference, as it has been to a large extent under the Turkish Government. Almost all efforts made to improve the condition of the city have come from outside sources, and many radical improvements which different European bodies would gladly have undertaken as to water-supply, drainage, etc., have been persistently thwarted by the Turkish authorities.

As to climate, the mean temperature for the four summer months (June to September) is in Jerusalem 74° F. (in the maritime plains 80°, and on the banks of the Jordan 92.5°). The mean maximum temperature in these summer months is 84.3°; a temperature of over 100° in the shade is very exceptional. The temperature is largely mitigated by dryness of atmosphere and by a cool breeze. During the rainy months of winter (December to March) the mean temperature is 53.6° (in the plains 57.1° and on the Jordan 71.2°). Frost is not uncommon, and snow some years lies for several days—sometimes to a considerable depth.

The rainfall in Jerusalem has now been carefully watched for over half a century. Like all this part of the Near East there is a wet winter season and a very dry summer season, each of about four months' duration. The mean rainfall is now about 26.5 inches; maximum, 42.95 inches, 1877-78; minimum, 12.5 in 1869-70. The most disagreeable and unhealthy days occur during May and from the middle of September to the end of October, when the dry southeast wind—the sirocco—blows sometimes for several successive days hot and stifling from over the deserts.

The water-supply of Jerusalem has ever been a problem. The ancient spring known as the 'Virgin's Spring,' or to the Arabs '*Ain Umm ed Deraj*' (lit. the Spring of the Mother of the Steps), and known in the Old Testament as Gihon, originally, no doubt, gave a fresh and plentiful supply. But though it is now at times fairly plentiful—but intermittent—the quality is bad. The other source, *Bír Eyyub*, is a deep well with a perennial supply at the bottom of equally sewage-tainted water. In Roman times—possibly originally a little earlier—great aqueducts were made to bring water to the city, but the most that reaches the city now is a four-inch iron pipe, and at two points the poor are at stated hours allowed a meager supply. This is the only really fresh water available, but the whole site of the city is riddled with cisterns of many kinds. All houses have private cisterns and they are a satisfactory source of supply if kept in good repair, cleaned periodically, and if no water is allowed to run into them except from a well-cleaned roof. But these provisos are often neglected. There has in the past been no sort of inspection or control over these cisterns, all of which need to be most rigidly supervised and provided with pumps. Various schemes have been made in recent years to provide the city with a better water-supply. I think it is a question whether it would not be more practical to enclose a great catchment area on higher ground west of the city and collect the rain-water in cisterns for conveyance to the city by pipes.

The drainage of Jerusalem also requires immediate attention. The existing sewers are old and utterly useless. Needless to say, nearly all the w.c.'s in the city are untrapped—the native w.c. being an open slit between flagstones, flushed only at rare intervals; it is not surprising that flies abound all the summer, and the older city is one of various and unpleasant odours. In some of the hospitals and schools a system of cesspools has been adopted.

Under the Turks no system of notification of infectious diseases was inaugurated, and amid many hospitals no efficient accommodation of cases needing isolation was provided. The only disease which seems to have been taken seriously in the Turkish Empire is cholera, and most elaborate, but fantastic and ridiculous, precautions are taken from time to time to exclude this disease. It must be admitted that on several occasions when cholera has raged in other districts, it failed to reach Jerusalem. Vaccination is not enforced and smallpox epidemics in this city are terrible in the extreme. Notification of deaths has never been carried out seriously. Recently certificates of death from medical men were asked for by the burial authorities, but the whole thing was an utter farce and, therefore, was rightly dropped.

It must not be thought that all this want of health organization was taken lightly by the medical men of the city. The difficulty has been the supineness of the Turks, the jealousy of all the various nationalities and their unwillingness to work together, and the want of close union and coöperation on the part of the medical men. The first really hopeful movement in a right direction was made shortly before the war, when, through the efforts of Professor Mühlens, a German professor of tropical diseases sent out by a Berlin committee, a kind of 'International Health Bureau' was with infinite difficulty established. Professor Mühlens was genuinely anxious to get the coöperation of other nationalities, and particularly of England. Locally, I had the privilege of representing the British and American consuls on the international committee, and was endeavoring almost up to the outbreak of hostilities to get a whole-time British scientific medical man sent out from England to coöperate in the laboratory work. The war has swept all this away, but while it was there great improvements were made. A pathological laboratory was started, where any medical men in the city could have blood examinations and tests made, *e.g.,* Widal, Wassermann, cultures, films of malaria, etc.; tumors were examined, etc.; serums were prepared. There was a small Pasteur Institute for rabies. This was only the beginning of what it was hoped would be done. By means of lectures and publications in English, French, German, and Arabic, a knowledge of the true nature of malaria and its mode of spread was being diffused, and an attempt to purify the cisterns was begun.

All this now waits for England to reorganize. It is a great work which is certain, if carried out, to have enormous results for good in the city and the land. Jerusalem is a city of hospitals, but half of them could be emptied if an efficient department of public health would organize these needed reforms. Although it may be necessary to have some form of international health committee, the executive should be British and free from any form of partisanship."

The most prevalent disease in Jerusalem is malaria. Two factors of importance bear particularly upon this question.

"The first is the great number of mosquitoes, among which *Anopheles maculipennis* are plentiful. The second is that the nearness of the tropical Jordan valley, where tropical malaria is endemic, provides a source of constant reinfection. There is no reason whatever to doubt that with proper organization this pest could be reduced to very small dimensions.

Blackwater fever is not uncommon in other parts of Palestine, but I have known several fatal cases originate in Jerusalem itself.

Of other tropical diseases it is only necessary to make brief mention here. Dengue fever occurs in rather frequent epidemics. Recurrent fever due to spirochetae is found occasionally. There are many sufferers from tropical boil in Jerusalem—most of these come from Aleppo and its neighborhood and from Bagdad, and I have never seen one originate in the mountain districts of Palestine. There is a local variety of the disease known as Jericho boil, which occurs in the Jordan Valley, which I have described elsewhere. I excised some of these, and the pathologist who investigated them considered that it was a distinct disease. This is very doubtful.

Jerusalem is one of the four centers in the Holy Land where lepers congregate. The majority, happily, are segregated in the Moravian Leper Hospital.

Among diseases of the eye, the commonest is ophthalmia. The onset of the annual exacerbation of ophthalmia is usually just after the occurrence of the highest mean temperature. Infection is due to flies and to the use of common mattresses or the use of dirty rags, etc., for wiping the eyes. Cataract occurs much as in England, but the cases stand operations much better, iritis being a rare disease in Jerusalem. 'In Palestine not 10% of the population have absolutely sound eyes' (Butler).

By far the oldest establishment is the English Mission Hospital, founded in 1842 and transferred to handsome new buildings a mile outside the old city walls in 1897. The new hospital was erected on plans made by Professor Beresford Pite. It is built on the pavilion system, and has two wards for men, two for women, and two for children. There are also some private wards for English tourists; its present number of beds could be doubled without altering the original plan. It had before the war accommodation for 70 beds and cots, with a staff of two English doctors, six English nursing sisters, and native assistant nurses and servants. It has in the past been used exclusively for Jews (Kosher food being the rule) except as regards the private patients, but since the war broke out it became—until our capture of Jerusalem—a 'Red Crescent Hospital,' and I hear that at one time no less than 200 typhus cases were accommodated there. It is now temporarily a Divisional headquarters, but may shortly be reopened as a general hospital for all classes, and, it is to be hoped, will continue to be so used.

The German Hospital, under the Kaiserwerth Deaconesses Committee, was originally an outgrowth of the English Hospital. It, too, was at first within the old wall, but now has fine buildings near the latter. It accommodates a little over 100 beds, and is a good surgical center. Then there are besides a Turkish Municipal Hospital, and French, Russian, Greek, Armenian, and Italian Hospitals—the last a very handsome building still in process of construction when the war broke out. There was also a small hospital, started in rented premises, in connection with the English bishop and supported largely from Canada.

The Jews have four general hospitals, one of which, known as Shaaret Zedek, is the largest and finest hospital in the city. There are a hospital for lepers supported by the Moravian community, and two eye hospitals. One of these is Jewish, the other is the British Ophthalmic Hospital, one of the most appreciated institutions in Jerusalem. It is supported by the Grand Priory of the Order of the Hospital of St. John of Jerusalem in England. It has two surgeons and a competent staff, and is of immense benefit, not only to the residents of Jerusalem of all classes, but also draws patients from every part of Palestine. It occupies picturesque buildings on the western side of the valley of Hinnom between the railway station and the Jaffa Gate. Between 30,000 and 40,000 out-patients and 1200 in-patients are treated annually. News comes to hand that the Turks used it as an ammunition store, and blew a great part of it up when they had so hastily to evacuate the city."

MORE NURSES NEEDED FOR WAR SERVICE.

The importance of an intensive training in nursing for young women in the large colleges of the country was emphasized at a meeting recently held at the State House, under the auspices of the Massachusetts Public Safety Committee. The conference was called to consider methods of increasing the number of nurses available for war service in Europe and America. Several hundred persons attended the meeting, representing the faculties and student bodies of leading New England educational institutions and nurses' associations.

Miss Julia Lathrop, chief of the Children's Bureau, Department of Labor, Washington, told of a twelve weeks' summer course which Vassar College would give to its regular students and others qualified in the elementary principles of nursing. She explained that after the student had completed the course she could then enter a hospital and become a graduate nurse after two years' additional training. By such a method, a large number of nurses would be developed who could relieve nurses now in hospitals for war duty in France, and be of material assistance to the country when the war is ended.

Miss Anne H. Strong, professor at Simmons College, spoke upon public health nursing. There is now an inadequate number of women trained for this purpose. Miss Strong made the statement that, while there are 6500 women capable of donning nurses' gowns in the United States, there are in the city of Berlin alone 6500 women similarly qualified. The District Nursing Association of Boston is giving a course to girls which already has resulted in the securing of more than 80 young women competent to perform the service required in this line. A number of young women have already registered for the intensive training course at Vassar.

VENTILATION AFTER FUMIGATION.

The spread of the bubonic plague to all parts of the world in recent years has turned attention to the necessity of improved means for the destruction of rats on board ships, as it is through these animals that the disease is transmitted. As rats are great travelers, and as they are to be found in all parts of vessels, and so infect all parts, it is necessary that every part of the ship be fumigated to prevent the spread of the disease.

The fumigants now most used for this purpose are sulphur dioxide and hydrocyanic acid gas. The objections to sulphur dioxide are that it takes a great length of time for the fumes to dissipate, often as much as 16-24 hours, and that it sometimes causes great damage. Hydrocyanic acid gas is much more efficient, for it quickly destroys animal life, does no damage to inanimate objects, and smaller quantities are needed. It takes a much shorter time to ventilate a ship after hydrocyanic acid gas than after sulphur dioxide, usually only 2-3 hours being required, but the exact time cannot be determined, owing to changing weather conditions.

As it is important that quarantine officers and steamship agents should know when persons may safely return on board, a system of artificial ventilation is a distinct saving of time. Experiments have been tried along these lines, and it has been found that the best system of artificial ventilation consists of a huge gasoline-driven air propeller, designed to propel boats and sleds. This delivers about 22,700 cubic feet of air per minute, is operated in a horizontal position, and drives air directly downward into the fumigated section of the ship. For holds deeper than thirty feet, a muslin chute is used to propel the air in the proper direction. A hold may be made safe when all hatches have been opened and the aerothrust operated for 30 minutes. A vessel with several holds is usually safe after three hours.

It should be understood that artificial ventilation does not take the place of natural ventilation, and on a warm, dry day, with a good breeze, natural ventilation may save time. But in cloudy or humid weather, artificial ventilation undoubtedly saves much time for all parties concerned.

* * *

APPLICATION OF OZONE TO THE PURIFICATION OF SWIMMING POOLS.

Recirculation and disinfection of swimming pool water may now be accepted as standard and mutually interdependent procedures in the sanitary control of plunge baths. Experimental data collected during the past few years have demonstrated beyond doubt the necessity of resorting to refiltration to aid in swimming pool purification, unless fresh, warm, well-filtered water is constantly supplied to the pool. In the latter process the waste of water, and of coal for heating it, coupled with the difficulty of removing all suspended matter by an initial filtration, are sufficient reasons for adopting refiltration of the pool water as a standard procedure. A clear water is essential, not mainly because of esthetic reasons, but for the reduction of the hazard of drowning.

The methods of disinfection hitherto employed are objectionable on one score or another. Ultraviolet light in actual practice has proved ineffective; copper sulphate in low dilutions is unreliable, and in high concentration is not only costly, but produces a water disagreeable to swim in; chlorine compounds, while effective as disinfectants, require a technical control usually not available in swimming pools, and when used in excess produce objectionable taste and odors in the water.

Ozone is now believed to be the best agent for the purification of swimming pool water. When one part of ozone per million parts of water is used, the result obtained is sterile water. When half part ozone per million parts of water is used, a bacterial reduction of 99.8% results, except when too great an excess of air is introduced with the ozone.

A study of the cost of operation of the ozonator has shown that a current consumption of 2 kilowatts per day with alternating current, and of 4 kilowatts per day with direct current, plus one cent a day for calcium chloride, represents the total operating cost for a 60,000 gallon pool. This amounts to 11 to 15 cents a day for alternating current (at 5 to 7 cents per kilowatt), and to 21 to 29 cents a day with direct current. The cost of refilling the pool is at least $30. The use of the ozonator decreases the number of times the pool must be emptied to such an extent that the cost of the installation is soon paid for.

The application of ozone to the purification of swimming pools is automatic in control, reliable in action, and inexpensive in application. No other chemical can be used to such great advantage in this connection.

* * *

Correspondence.

BACTERIOLOGY OF CEREBROSPINAL MENINGITIS.

Welsh Metropolitan War Hospital,
Cardiff, Wales, Feb. 11, 1918.

Mr. Editor:—

I notice from your editorial of Jan. 17, 1918, on "The Military Significance of Cerebrospinal Meningitis" that the new knowledge of the bacteriology of this disease has not yet come to your attention.

When on duty in London in September, 1917, I learned that studies conducted this side of the water have clearly demonstrated that the meningococcus is not an individual organism but is a group of at least four, as we also now know the pneumococcus to be. These can readily be distinguished by certain precipitation or agglutination tests.

The method of treatment now is to identify the type of organism and to treat the case with a polyvalent (all four types) serum strongly fortified with the individual type of meningococcus.

Carriers are detected by culturing the nasopharynx in large groups of men. The plate method of growing the germs is used. Military units with not more than six per cent. of carriers have little trouble with meningitis, but when, as is frequently found, the rate runs from 20% to 40% or more, trouble can be predicted. The carrier rate is then cut down by inhalations of vaporized flavine followed later by zinc sulphate, also vaporized.

This is the method that the British and (I believe) other armies are now employing to keep down the incidence of cerebrospinal meningitis in training camps. The work is relatively simple as new medical officers are trained for the work in but one week.

Yours truly,

WM. D. REID, *Lieut., M.O.R.C.*

VENEREAL DRUG LEGISLATION.

Boston, March 9, 1918.

Mr. Editor:—

Re—proposed legislation "relative to the prescribing and compounding of certain drugs."

Is it not true that the existing laws of this Commonwealth state that none but a registered physician shall prescribe or recommend *any* drugs or medicines for the cure or alleviation of *any* disease? Such being true, is it not a fact that "counter prescribing and advice" and back room attention—in other words, the treatment of diseases, or the practice of medicine—are prevalent in the majority of the drug stores in this state? Still further, is it not true that the quack medicine and nostrum manufacturers depend upon such drug stores (and certain newspapers and department stores) to disseminate their fraudulent and worthless products? Ergo, why not enforce the existing laws as they are written? Would not such enforcement cover the ground?

Yours very truly,

JAMES BROWN THORNTON, M.D.

SOCIETY NOTICES.

NEW ENGLAND PHYSICAL THERAPEUTIC ASSOCIATION.—The next regular meeting of the New England Physical Therapeutic Association will be held at the Hotel Brunswick, Boston, Tuesday, March 26, at 8 P.M. Dinner will be served at 6 P.M. Dr. Percy G. Stiles, of Harvard Medical School, will read a paper on the Autonomic Nervous System.

A cordial invitation is extended to all members of the medical profession to be present.

FRANK E. STOWELL, M.D, *President*,
FREDERICK H. MORSE, M.D., *Secretary*,
FRANK B. GRANGER, M.D., *Treasurer*.

BOSTON MEDICAL LIBRARY in conjunction with the SUFFOLK DISTRICT MEDICAL SOCIETY.—Medical Section meeting, John Ware Hall, Wednesday, March 20, 1918, at 8.15 P.M.

"Social and Health Conditions among the Civilian Population of France." Dr. James Alexander Miller.

Dr. Miller was a member of the commission sent last summer to France by the Rockefeller Foundation to undertake anti-tuberculosis work.

Light refreshments after the meeting.

EDWIN A. LOCKE, M.D., *Chairman*,
GEORGE R. MINOT, M.D., *Secretary*.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.—A special meeting of the Society will be held at the Boston Medical Library on Friday, March 22, 1918, at 12 o'clock noon.

Business: Report and recommendations of the Committee on the question of financial assistance of those who enlist.

Consideration of the question of omitting the annual dinner this year.

Paper: John Bapst Blake, Chairman of the Massachusetts State Committee for National Defense, will speak on the Medical Aspects of the War.

Lunch will be served at 1.15 P.M.

LYMAN S. HAPGOOD, *Secretary*.

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at the Roxbury Masonic Temple, 171 Warren Street, March 26, at 8.00 P.M. sharp. Phone Roxbury 22753.

Communication: "The Management of Syphilis in the British Army," G. W. Winchester, M.D., Central Military Hospital, Lichfield, England.

Discussion, F. P. McCarthy, M.D.

The Censors meet for the examination of candidates, Thursday, May 2, 1918. Annual Meeting, Wednesday, May 15, 1918.

BRADFORD KENT, M.D., *Secretary*.

EAST BOSTON MEDICAL SOCIETY.—Dr. W. P. Graves will speak before the East Boston Medical Society Friday, March 22, at 8.30 P.M., at Walcott Hall, Central Square.

Subject: "Ovarian Organotherapy."

Physicians interested in this subject are invited to be present.

J. DANFORTH TAYLOR, M.D., *Secretary*.

RECENT DEATHS.

DR. CLARENCE L. HOWES, one of the most prominent medical practitioners in Plymouth County, died recently at his home at Hanover Four Corners, after a short illness. He was born at Mattapoisett, March 28, 1848, the son of Dr. Woodbridge Howes. The family removed to Hanover in 1864, and young Howes attended Hanover Academy, where he fitted for Amherst College from which he graduated in 1869. After a period of school teaching he entered Massachusetts Institute of Technology and graduated in 1873 as a civil engineer. He followed this profession until 1876 when he began the study of medicine. He graduated from the Long Island College Hospital in 1878, and then returned to Hanover where he soon built up a practice which extended to all parts of Plymouth County. He was a member of the Hanover school committee for 33 consecutive years, was prominent in town and county affairs and a writer on contemporaneous matters. He is survived by a daughter, Caroline.

DR. CHARLES F. OSMAN of Dorchester, died recently at his home. He was born in New York, July 27, 1858, but his father, also a physician, removed to Boston when the son was but a boy, and his school years were passed here. He was graduated from Harvard and also from the Harvard Medical School in the Class of 1880, and had since practised in Dorchester.

Dr. Osman was a member of various medical societies. He is survived by his widow and one daughter.

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Addresses.

THE PLACE OF THE HOME, THE DISPENSARY, THE SANATORIUM OR HOSPITAL IN THE TREATMENT OF TUBERCULOSIS (VALUE OF DIET, REST, FRESH AIR, ETC.).*

By Edward O. Otis, M.D., Boston,

Professor of Pulmonary Diseases and Climatology, Tufts College Medical School.

One can, in the first place, make various divisions of tuberculous individuals with regard to treatment.

First. There are those who receive no treatment at all; and of these there are some who never know that they have tuberculosis, and recover with no direct treatment. They suffer for a while from a moderate depression of health included under the generic term of "run down." They reorganize more or less their routine of life, take a vacation, pay more attention to rest and food, and in a short time their resistance recovers its normal power, and their usual health returns. There are others in a more or less advanced stage, who have no acute symptoms, maintain an equilibrium between the infection and the resistance, and live on indefinitely, attending to their occupation with more or less regularity. They may or may not have been under treatment in a sanatorium or elsewhere; they know they have tuberculosis, for they cough and expectorate, but so long as their general health remains fairly good and no acute symptoms occur they go on their way and attend to their duties regardless of their disease. They are probably more or less of a menace to their community, but it is apparently one of the unavoidable risks incident to civilization.

Second. We can make the general division of those who are treated for their disease, between those who receive treatment at home or in an open health resort,—which includes the majority,—and those who go to some institution for treatment; and of those who are treated at home we can make a further distinction between those who receive treatment from a dispensary and those who are treated solely by their family physician.

All treatment must be based upon the same fundamental principles, whether at home or in a sanatorium, namely, what we all know as the "hygienic-dietetic" or "open air" treatment, and ideally this treatment should be most successfully carried out in a properly equipped and conducted sanatorium, but there are often personal or other considerations which render the home treatment the only one, and indeed the most satisfactory. Of course it is understood that in speaking of treatment here I am referring to such cases as offer a reasonable, or at least some chance of arrest or improvement, and it is difficult to determine at the outset what these cases are. Some very unpromising cases, as we all know, make remarkable recoveries, even when well advanced. For the obviously incurable, far-advanced cases the "open-air cure" is not applicable. Such need only comfortable care while they drag out their weary days, either in a consumptive hospital or at home. Infinitely pathetic is the slow and steady march to the grave of the advanced consumptive, and one cannot be too patient and tender with such unfortunate ones.

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* An address before the Framingham Medical Club and the Community Health Station, January 3, 1918.

Furthermore, in speaking of tuberculosis in relation to treatment, I am, of course, referring to *clinical* tuberculosis, which has symptoms of toxemia, such as fever, tachycardia, cough, loss of weight and strength, etc., not of *anatomical* tuberculosis, so called, in which the physical examination indicates some tuberculous infiltration, but without activity as indicated by symptoms. The individual is in no way ill, and consequently needs no treatment. Probably most of us are more or less in this latter category. As I have said above, a large number of active tuberculous persons must be treated at their homes if treated at all; for, in the first place, there are not sanatorium accommodations for but a minority, and in the second place, many will not or cannot go to an institution, for various reasons. Moreover, home treatment, if conducted by a conscientious and painstaking physician, with the coöperation of the patient, will, in many cases at least, produce quite as good results as sanatorium treatment, and sometimes better.

The present-day treatment of tuberculosis is essentially hygienic,—rest, diet, fresh air, and the prompt correction of any complications are the four basic elements. What is almost equally important, but not always sufficiently appreciated, is the psychological element in the treatment, and herein is the preëminent value of the inspiring physician, whether in the sanatorium or in home treatment; hope, faith, courage, peace of mind, are most essential for a successful conduct of the treatment, and the true tuberculosis physician must inspire his patients with these virtues. The late Doctors Trudeau of Saranac and King of the Loomis Sanatorium were striking examples of this kind of a physician.

To treat a case successfully at home requires a careful and painstaking arrangement of all the details by the physician. He must arrange the diet, make out the menu, assure himself that the proper amount of food is taken; arrange the room for sleeping or, better, a sleeping-porch, which can often be inexpensively done. If there is an afternoon temperature, he must keep the patient at rest and, when possible, have a nurse, as with other bed patients. Later, when the time for exercise has come, he must carefully arrange and supervise that, both as to the kind and amount. The physician must, so to speak, hold a weekly or periodic class with his patient and go over the previous period's record, and hence a record of the pulse, temperature, rest, amount of food taken, time spent in the open air, and whatever other details the physician may desire should be kept by the patient, nurse or attendant. Of course, the proper disposal of the sputum must be insisted upon and the patient instructed as to safe coughing. The other members of the household must be instructed as to their duty towards the patient, and given an intelligent understanding of the situation. All the members of the household should be examined, for they are "contacts." With an enthusiastic, painstaking physician, who possesses the confidence of his patient, and who is willing to devote the time for a proper and complete management of the case, and with the intelligent coöperation of the patient and other members of the household, I believe a case of tuberculosis can be perfectly well treated at home, as I have before said.

The Dispensary. The principal rôle of the dispensary is in making the diagnosis and arranging for the treatment of the tuberculous patient, either by his own physician at home, or in a sanatorium or hospital. I do not believe that it is the province of the dispensary to treat its tuberculous patients, nor can it satisfactorily do so. If, however, it does assume treatment, as it sometimes seems compelled to do, it must proceed upon much the same plan as I have outlined for the private physician. The home of the patient should be visited by the dispensary physician or visiting nurse, proper arrangements devised for fresh air both day and night, the diet arranged, and, in brief, all the details of the treatment. At least once a week the patient, if an ambulatory case, should report at the dispensary for a review of the previous week, and to receive whatever new instructions are necessary. In fact, the dispensary, when it does attempt treatment, must proceed upon much the same plan as the well-known "Class Method" so successfully developed by Dr. Pratt.

The Sanatorium. The sanatorium is only a large home, so to speak, especially designed and equipped for the special purpose of treating this single disease with medical service trained in tuberculosis work. The same general plan of treatment is followed as I have outlined for the home,—fresh air, proper and abundant food, rest—complete in fever cases—and supervised exercise, when the time for exercise comes. There are, however, certain obvious advantages which the sanatorium possesses which do not or may not exist in the home treatment:

First. The sanatorium is established in a supposedly favorable location as to climate, situation, protection from wind, etc. If a state sanatorium, it is situated in the best available location in the state in regard to climate, purity of air, etc.

Second. A skilled physician is always at hand for any emergency, such as hemorrhage or any sudden complication.

Third. When a dietitian is employed, as is the case in most large sanatoria, the diet as to food values can be arranged more scientifically.

Fourth. Certain specific forms of treatment, as the use of tuberculin or the employment of artificial pneumothorax, can only, or best, be carried out in an institution where physicians are experienced in these methods of treatment.

Fifth. Better discipline can often be maintained, especially with certain patients of weak will-power, and lapses from the rigidity of the routine treatment are avoided. Indeed, with a patient of little self-control the sanatorium is the only place which offers any prospect of successful treatment.

Sixth. The example of others all doing the same thing—taking the "cure"—makes it easier to follow out the treatment, and encourages one to do so when he sees the benefit of it in others.

With all its advantages, the sanatorium is also not without disadvantages. In the first place, when a large number of patients are treated *en masse* there is, of necessity, a certain rigidity in the treatment. Each patient cannot be individualized as in home treatment, or receive so much personal attention from the sanatorium physician. Again, he may not be able to obtain just the kind of food he has been accustomed to at home, and with certain nationalities this means much. There is also a monotony of diets, which tends to loss of appetite. The companionship may not always be agreeable, and, on the other hand, loneliness and homesickness may depress one. In general, there are the annoyances and disadvantages incident to any institutional life, be it in a hospital or sanatorium. Some patients will never do well in a sanatorium, while for others it is the only place which offers a reasonable hope of arrest.

The Consumptive Hospital. The consumptive hospital is quite a different institution from the sanatorium. It is, primarily and chiefly, intended for advanced cases, and its principal duty is to afford these poor patients comfortable care while they live. In my opinion no such equipment for open-air life is necessary as in a sanatorium. Warm, well ventilated wards are the essential thing. The consumptive hospital as a permanency is comparable to the reception hospital in connection with a sanatorium where patients are temporarily placed for observation or for the treatment of acute symptoms. Even though advanced and apparently hopeless, some cases will so far regain their resistance as to be enabled to lead a comfortable existence and do a certain amount of work. Some will even achieve a genuine arrest, with a large amount of fibrosis, to be sure, which will prevent any strenuous exertion but which will allow a limited activity. There are at present many examples of the consumptive hospital in this state, as all cities above a certain number of inhabitants are obliged by law to provide them. In Europe the general hospitals admit such cases. The poor, advanced consumptive has almost infinite troubles and distresses of one kind or another, and needs all the care and sympathy we can give him, for his condition is a lamentable one indeed. He is often the most grateful of patients, though sometimes he is also ths most incessant and imperative in his demands. In brief, the main treatment in a consumptive hospital for advanced, hopeless cases is everything and anything which will make the patient comfortable and mitigate his sufferings and weariness.

Diet, Rest, Fresh Air, Exercise. As has been said above, the basic principles of treatment are the same whether at home or in a sanatorium, and to repeat, they are, first, a painstaking and constant supervision by the physician, who should arrange all the details of the new life of the patient. "A masterful arrangement on the part of the doctor," as Osler puts it. Diet, rest, sunshine and fresh air, and exercise when permissible. When treated at home it is well to have the patient keep a daily record of his temperature and such other details as the physician may desire. As to diet, if the digestion is normal, three good meals a day of a mixed diet, with an added amount of fat and carbohydrates if the patient is below weight, as he generally is, will suffice. I insist upon a liberal amount of bread and butter and a glass of milk with every meal. If the patient cannot take the three ample meals, lunches between meals are to be added to make up the deficiency, such as milk and eggs, broth, cocoa, or anything nutritious that he can be persuaded to take. In many cases the physician will have to arrange the daily menu in order to be certain that his patient gets the right kind and amount of nourishing food. "My kitchen is my pharmacy," is the oft-quoted saying of Dettweiler. In general, the average tuberculous patient needs from 500 to 700 calories of proteids, 1200 to 1500 calories of carbohydrates, and 1300 to 1500 calories of fats. Very admirable charts have been prepared by the United States Department of Agriculture, indicating pictorially the food values of the different articles of diet, so that one can see at a glance the amount of proteids, carbohydrates and fats any article of food contains, from a banana to a herring. If digestive disturbances exist these must receive proper attention, and the diet modified in such a way as can be digested and assimilated. One must ever bear in mind that "a consumptive who does not eat is doomed," and that his stomach is one of the toughest organs in his body. If the physician does not go to the extent of arranging the daily menu he can give a list of nutritious and proper foods from which to make a selection.

Rest. During the whole course of the treatment rest must hold a predominant place. If there is fever, an afternoon temperature above 99.5°, the rest is to be absolute as in any other active infection, and when possible this rest should be in the open air, as in a sleeping porch. If there is no rise of temperature, there should still be rest a considerable portion of the day, but not bed rest, and the night's sleep should be long. Dr. Pratt is the energetic exponent of complete rest throughout the whole course of the treatment. Few, however, I think, are disposed to go as far as that, but would rather agree with Dr. Baldwin in his admirable statement of the great principles of treatment in his recent address before this Club, namely, "*regulated exercise* during convalescence or quiescence of the disease." If the patient is kept at rest during the long months, or it may be years, of his treatment, his morale may become so enfeebled that he may never dare to resume his place as an active member of the community again. He may effect his cure, but in doing so he has destroyed his usefulness. Those of us who see much of tuberculosis are familiar with such unfortunate cases. At the commencement of the treatment, even if there is no fever, it is a wise rule to keep the patient at absolute rest for two weeks; for in this way, the physician can get a better idea of the resistance and recuperative powers of his patient. One can never do harm by insisting upon much rest, and when in doubt it is safest to prescribe rest. Before the treatment of tuberculosis had become so standardized as it is now, the significance of rest in the active stage of the disease, when there was fever, was not fully appreciated, strange as it may seem, for in other acute infections it was recognized that complete rest was the foundation of all treatment. Undoubtedly, in consequence, many lost their chance of recovery by exercising while there was fever, and at the present time it is to be feared that not all physicians fully realize the supreme importance of "rest when fever"—*absolute rest.*

Fresh Air. If possible, a sleeping porch or the protected corner of a piazza should be arranged for outdoor sleeping, although a large, airy room with several windows, and which has had the sunshine during the day, is, in many cases, a satisfactory substitute. With a little ingenuity on the part of the physician, an inexpensive sleeping porch can generally be devised. The National Association for the Study and Prevention of Tuberculosis has issued a little pamphlet illustrating many simple appliances for outdoor sleeping. It is noteworthy how readily most persons adapt themselves to outdoor sleeping, if properly protected and their feet are warm, for one cannot sleep with cold feet. There must be protection from the wind, and if the patient is awakened early by the morning light, a band or a long stocking can be tied over the eyes. Of bed clothes, the best plan is to have a good part of them upon the patient himself, in the form of woolen underclothes, thick pajamas, woolen stockings, a knit helmet for the head. Newspapers placed under the mattress will shut out the wind from below. When one has once become accustomed to outdoor sleeping he is never quite satisfied to sleep indoors again, for he finds the open-air sleep so much more refreshing. One should, however, dress and undress in a warm room.

Exercise. This subject has already been referred to, but it is of such vital importance to have a clear understanding of it that repetition will not be amiss. No exercise while there is fever. When, however, fever has disappeared and all the symptoms are improving, the weight and strength increasing, cough and expectoration diminishing, carefully regulated exercise may be begun, and if there is no reaction it can gradually be increased. If, on the contrary, there is evidence of a reaction after the exercise, as indicated by a rise of temperature a half hour or an hour later, with headache and a general feeling of malaise, the exercise must be omitted for a few days or lessened.

It is of extreme importance that the exercise should be carefully prescribed, both as to kind and time, and constantly supervised; for example, so many holes of golf, so long a walk, so much garden work, and with so much expenditure of energy, and for a definite period of time. is the careful plan and regulation of exercise pursued at the Loomis Sanatorium. Reference has already been made to the Pratt method, of no exercise during the whole course of the treatment. Dettweiler of Falkenstein also introduced this plan of continuous rest. The results, it must be confessed, are excellent, but, nevertheless, I am of the opinion that regulated exercise at the proper period of the treatment, when all the symptoms are improving, produces equally good results, and, moreover, prepares the patient to resume his work when the arrest is accomplished. As to gymnastic and breathing exercises, advocated by some, I do not believe they are usually advisable or are of any especial value, and they may do harm. All violent exercise, such as a violent game of tennis, should, of course, be avoided. It is well to remember that more patients injure themselves by too much exercise than by too little. It is a very inadequate comprehension of the subject of exercise for the tuberculous individual, to say, "Take a little exercise"; the kind, the amount, and the time should all be carefully prescribed.

The Cold Bath. The cold morning bath is good for some patients and bad for others and should, therefore, not be ordered indiscriminately. If the patient is fairly robust and has a good resistance, the cold bath will act as a tonic, and is a useful adjunct to the treatment. If, on the contrary, the patient is slow to react, feels chilly for some time after the bath, and has a feeling of depression rather than of invigoration, the bath should either be omitted or gradually begun, first with warm water or dry rubbing, and then with the wet pack or cooler water until a temperature of 60° F. can be endured without discomfort or lack of prompt reaction. There are many simple methods of taking the cold bath; all that is actually necessary is a washcloth or large sponge, a bowl of water to which a little sea salt may be added, and a coarse towel. If, for any reason, the cold bath is not considered applicable for the whole body, it can be applied to the neck and chest.

Clothing. No more clothing should be worn than is sufficient for comfort. Generally the tuberculous patient will require rather more warm clothing than the normal person, but an excessive amount, especially about the chest, is unnecessary and debilitating. It is a popular belief, or was, that the consumptive must be heavily clothed, and one often meets with examples of this erroneous idea. Increased bodily production of heat by increased bodily energy is the essential means of keeping comfortably warm, not by excessive clothing. For outdoor life, a pair of arctics, with thick woolen stockings and a fur- or woolen-lined overcoat, or one of leather, will render one comfortable in cold weather. One can dress in the same way and sit by an open window when, for any reason, he cannot be out of doors.

It will be seen from this hasty review of the treatment of curable cases of tuberculosis that the fundamental principles of treatment are few and simple, but their successful application requires careful, painstaking, and constant attention to the many details involved, and an individualization of each patient.

The descent to active tuberculosis is a slow and insidious one, and the ascent to health again is often equally slow, and demands patience and fortitude on the part of the patient, and unremitting care on the part of the physician.

Bowdoin Medical School Graduation.—Report from Portland, Me., states that the annual graduation exercises of a class of 18 were held at the Bowdoin Medical School on March 2—three months in advance of the usual time.

SOME MODERN MEDICAL PROBLEMS.*

By Timothy Leary, M.D., Boston.

The War Lord, using Christianity as a shield, while invoking the Pagan gods, has let loose upon the world a war which has wiped out at one stroke the progress of centuries of civilization. Pursuant to the Pagan practices, millions of human beings have been subjected to violence and death, international law is made a subject for mockery, treaties have become scraps of paper, deceit and rapine and the slavery and slaughter of innocents have replaced the Christian standards. We have reverted to the primitive conditions of the Pagan period.

How great this reversion has been is illustrated by the old but new medical problems of the present war.

The war is being fought underground on the Western front, in the most fertile terrain of Europe. This garden of the world owed its fruitfulness to high fertilization with manure, and to the moisture of the climate. The trenches in which fighting is being carried on, dug through this rich ground, are converted into veritable sewers by the continuous rainfall.

We were proud of the fact that advances in bacteriology had made the world clean, surgically, even in war. The conditions of trench warfare have reversed this picture, and we are carried back to the days of Ambroise Paré or beyond. Clean wounds are the exception, and not the rule. The bacteriology of the wounds is actually that of sewage. Instead of clean-cut rifle wounds, lacerated and contused wounds, due to shrapnel or that weapon of the barbaric period, the trench bomb, are most commonly met with. The driving of sewage-soaked clothing into the wounds, by fragments of shrapnel and bomb casing, results in a high percentage of infections with the gas bacillus, derived, perhaps, from the putrefying bodies of the unburied dead.

The fire pots and winged fire of the ancients have again come into use and the stink-pots are represented by deadly gases, which cauterize the mucous membranes as with a flame. The use of high explosive shells has resulted in a new phenomenon,—shell shock,—visited often on those so remote from the bursting shell that external injuries are slight, if any; marked in fatal cases by minute hemorrhages into the brain, and in the living, by manifestations, perhaps partly neurasthenic or hysterical, of minds literally shaken from their foundations.

Another new but old lesion is the so-called trench foot. Thought in the beginning of the war to be due to freezing of the feet, it is now agreed to be a neuro-vascular phenomenon, favored by varicosities or other disturbances of the circulation, and due to the long exposure, in tight boots, without ventilation, in the water of the trenches. It is interesting to note that Larrey, Napoleon's great surgeon, recognized during the Napoleonic wars that this phenomenon did not arise during periods of freezing, but appeared after the exposure of men to continuous wet and cold, when opportunity for change of footwear did not present.

The necessarily intimate association of human beings in masses in the trenches and dugouts, with infrequent opportunity for bathing or change of clothing, has given rise to universal infestation with that too familiar friend of mankind,—the body louse, or the "cootie" of trench slang. The cootie is the carrier of typhus fever, which the allied forces have largely escaped, not because of the absence of lice, but because the troops as a whole come from countries where typhus has largely disappeared with the louse, as a result of the practice of personal cleanliness. On the Eastern and Southern fronts, louse transfer has been followed by epidemics of typhus, originating in the endemic centers of the disease, the lands of the annual bath,—Serbia, Bulgaria, Russia and Turkey.

Another pest of the underworld, the rat, is able to flourish under trench conditions. This animal with other rodents, such as the field vole, is a carrier of a group of spirochetae, which recent observations in Japan, where from the nature of the habitations rat infestation is common, have shown to be the pathogenic agents producing rat-bite fever and infectious jaundice. The obscure trench fevers and trench nephritis are accompanied by the presence of spirochetae resembling those found in rodents, and it is probable that these rat parasites, transmitted either by biting, or by the contamination of food with rat excreta, are causal agents of these diseases.

These problems are not new, except to our civilization. We are afflicted with the plagues of the cave dwellers.

The truly newer problems we have met and are solving. Though religion has faltered and justice has failed; though our boasted efficiency has miscarried, there is one service in every army which has met all requirements, and has had no explanations or apologies to offer.

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* Address delivered to the Graduating Class of the Tufts College Medical School Feb. 6, 1918.

President Eliot said, in May, 1917:

> "In the present crisis in the life of the American people, the medical profession cannot but rejoice that it was better prepared for war service than any other profession in the country, including the military and naval profession. It was prepared to apply every medical and surgical invention of the last fifty years at once for the benefit of the Army and Navy. It did apply inoculation for typhoid, and conducted a successful resistance to typhus. It was already preventing yellow fever, and curing and preventing hookworm disease and malaria. It promptly demonstrated that surgery was something more than cutting off and cutting out—it could rectify and repair. It could make immediate application in war of the recently discovered improvements in orthopedic and dental surgery. The first aid which America was able to give to the European combatants was medical aid. This country is not ready yet to give effective military or naval aid; but we were ready to send in the first year of the war doctors, surgeons, nurses and orderlies by the thousand, thoroughly prepared to render efficient service at the great hospitals at the front or in the rear. In war as in peace, the medical profession has shown itself to be thoroughly altruistic, beneficent and self-sacrificing."

Lloyd George has said:

> "When you come to the Medical Service,—the men and the women,—they have never shown greater courage, knowledge and experience. Thousands of them have devoted themselves—devotion is the word—to the curing of the wounded and the healing of the sick. We owe our thanks to the medical profession. They have suffered; hundreds have been killed and many more hundreds wounded."

Earl Curzon, also in moving a vote of thanks to the British forces, made the following statement:

> "There has never been an army that has been in such a state of health as the British Army in France. In other wars disease has often proved more fatal than the guns of the enemy. We remember it in the Crimea. There were even some sad stories in South Africa. But in this war the health of the army in the field has actually been better than that of the civilian population at home. It has been better than the health of the army in times of peace, and, paradoxical as it may seem, the British Army in France has really been a sanitarium for the British citizen."

Our own experience is similar. Though much publicity has been given to inadequate camp and hospital conditions, due to deficiencies of the quartermaster service, the fact remains that the mortality from disease among our troops is but a fraction of the mortality among our civilian population. The principal menaces to health have been epidemics of pneumonia, meningitis, and measles. The first two, which furnish a considerable mortality record, will be controlled, I venture to prophesy, by prophylactic vaccination.

All of you who are physically fit will go automatically into the service of your country. It will be your duty, as a part of the great medical services, to deal with the problems for which civil life has prepared you, and with the new old problems which I have cited, and others which may arise.

Your duties will not end there. It is the glorious function of your profession to serve as the great salvage corps, for the restoring to humanity of the derelict fragments of human beings, whom war has crippled in body or mind, but not destroyed. The crippled veteran of previous wars has been permitted to drag out an existence, unhappy though pensioned, a salaried pauper, dependent on the charity of the community and serving no useful purpose. The crippled veteran of this war will, as the result of organized effort for his reconstruction and rehabilitation, be given every opportunity to prepare himself for work adapted to his physical disability, and so will be able to serve some useful purpose in civil life. In other words, he will be given back not only his body, but his independence of mind and soul, as far as is possible.

On your return at the end of the war, with added experience and ripened wisdom, with an outlook broadened and chastened by contact with suffering humanity, you will have several options offered you.

Those of you who are adventurous may have a hand in the spreading of civilization to new lands. The world has so shrunk that the conquest of the savage and uninhabited portions of the globe has become a purely medical problem. The civilization of the Congo and Eastern, Western and Central Africa, of the wilds of South America, in a word, of the unredeemed portions of the world's surface, is no longer a question of men, or money, or transportation or hostile tribes, but of disease, which paralyzes the forces of the white man.

The insuperable difficulties which met the French effort to build the Panama Canal, were not due to lack of engineering skill, nor of money to carry out the enterprise, but arose because the workers were killed off by disease faster than their successors could be supplied. This, the principal obstacle to success, was overcome by the destruction of the insect carriers of disease, according to methods whose efficacy was demonstrated by Gorgas, following the discoveries of Reed, Carroll, Lazear and Agramonte,—methods which have made the harbors of Cuba, the Spanish Main, Brazil, and the Western Tropics safe ports of call at all seasons, for the first time in their history. The Panama Canal is a monument to the efficiency of medical research.

If you should choose a life of adventure in the advancing of civilization in the wilds, you may be called upon to walk alone and unafraid into the valley of the shadow of death; to exhibit a form of courage which men with other training rarely show. As an example in point, immediately following the Spanish-American War, the city of Santiago was garrisoned by the men who fought at Caney. No man who has looked upon that naked sugarloaf, crowned with its blockhouse, can for a moment doubt the courage of the troops who stormed and took it. And yet, when yellow fever appeared in the city, the withdrawal of these troops took on the nature of a flight, and faces blanched with fear were in evidence. These men had shown their bravery in the face of Spanish bullets—but bullets are tangible things. This unseen death, creeping in the dark upon its victims, caused by an agent which human eye cannot see, even with the aid of the microscope, converting human beings into loathsome objects to be isolated from their kind and, if death comes, to be thrust hastily into the ground, without the pomp and panoply of war, might well give them pause. To charge into a storm of bullets, with Hotspur enthusiasm for the fray, and the shouts of comrades in one's ears, is one thing, but to face alone in cold blood the unseen death, is another.

It is the duty of your profession to meet and solve these problems, and thus make safe the unreclaimed portions of the world for the white man and his civilization.

Another choice which will be offered you for your life work is entrance into one of the public services. The Army, the Navy and the Public Health Services of the National Government, even before the war, had grown with our expansion into a world power. To the credit of the Army Medical Corps is to be placed the solution of the yellow fever problem, the recognition of hookworm disease as the cause of tropical anemia, and the first adequate demonstration of the control of typhoid infection by prophylactic vaccination. The Medical Corps of the Navy has advanced our knowledge of tropical diseases, and has demonstrated the value of prophylaxis in the checking of venereal infection. The Public Health Service has added to our information on anaphylaxis, the etiology of measles, the eradication of vermin, and the control of bubonic plague and cholera. This service is the watchdog of our ports, obtaining first-hand knowledge of the plagues which beset foreign countries, and guarding our shores from their invasion. It meets and administers internal problems arising from infection, where the local health authorities are imperfectly equipped, or where the country at large is placed in jeopardy from a new or unusual danger. The Public Health Service has worked with the Rockefeller Foundation in curbing the spread of hookworm disease.

We are slowly realizing that the child—our chief asset—can be converted into a liability or its value as an asset increased, depending upon the care which we are willing or able to expend upon it. In older civilizations, and in our own until a recent period, the welfare of the child was a responsibility of the family alone. The socialization of education led to the disclosure that efforts to develop a mind were seriously handicapped unless that mind occupied a body which was healthy. Nowhere has the influence of bodily state on the mind been more clearly demonstrated than in our Southern country, where the offspring of an intelligent, adventurous race have been converted into feeble-bodied and feeble-minded paupers, "poor white trash," by the ravages of the hookworm.

The arousing of legislators to the necessity of caring for such problems is slow, because legislatures reflect the attitude of the public. The training of the public to think nationally, or, better, socially, instead of selfishly or parochially, is a long and weary task. The pioneer thinkers, whose training in medicine brings home to them first the national or international character of these problems and their solution, are able more readily to awaken the minds of the few to the necessities of the situation. As a result, there have arisen a series of quasi-public foundations, supported by private funds, which have taken up for the time the burdens which ultimately the public must bear. The bronze doors of the Forsyth Infirmary for Children symbolize the evolution we are undergoing. One door, illustrating primitive motherhood, is titled, "The Mother, Giver of Life and Love"; the other, expressing the modern concept of our responsibilities, is inscribed, "The Commonweal, Giver of Health and Learning."

The lesson we are here to teach is that the care of the public health is a public function, and that many of the disease problems which were thought to be private and personal, or, at most, municipal or territorial, are national or international in their significance. No better example could be supplied than that furnished by hookworm disease in our own lands. Thought at first to be a purely local problem in Porto Rico, investigations have shown that infection with this pest has spread widely throughout our Southern country and the Philippines, and the results of treatment according to the teachings of Ashford, are giving rise to a virtually new birth of a nation.

The prejudices we have inherited from our forebears have led us to adopt an attitude toward certain diseases which is absurd in the light of modern knowledge. We shun and isolate the sufferer from leprosy, a disease which is transmitted only through long and intimate contact, but we allow in many states the man with advanced tuberculosis, who is expectorating billions of tubercle bacilli every day, his complete freedom. Worse than that, we permit the individual infected with syphilis to walk the streets unrestrained, to work in our shops, to eat in our restaurants and to enter our homes. Syphilis is a disease usually lacking the spectacular external manifestations which brand the leper, but due to a parasite so ready for transfer to a new host, and so superficially placed in many of the hidden lesions that mere momentary contact, and indeed indirect contact, by means of a drinking cup, for instance, may suffice to mark a new victim.

The mantle of personal privacy, which has cloaked and favored the spread of this disease, is being lifted by the demands of an enlightened public opinion. It will be a part of your duty to make plain to the world that no man has a right to inflict disease upon his neighbor, knowingly or through ignorance. The public must learn that investigations with reference to the so-called private diseases, and treatment of the individual for the protection of the many, are no more invasions of personal liberty than is the law which prohibits the property owner from building a fire trap, on land which he owns, in the restricted districts of a city. If the lesions of syphilis, or gonorrhea, were as visible on the surface as are those of the leper, there would be no need of debate or instruction in this subject.

Activity in the control of these plagues was never more needed than now, when we are at war. The Wassermann test has shocked us with its revelations of the universal spread of syphilis among our people. But, if German, French and English experiences are a criterion, we may expect a tremendous increase in its prevalence, following the return of our troops. Men who are freed in mass from the restraints and influences of home life are prone to develop the mob spirit, and tend to cast aside the teachings of religion and civilization and even common sense. So that, while we look upon our men as superior to the common lot, while religion and discipline and pride in clean living and self-restraint will serve to save many from exposure, we may expect a large addition to the number of our infected, with the closing of the war.

State and municipal health boards are preparing to assist the profession and the public in the discovery, treatment and continued observation of these cases. So important is the specific treatment of syphilis with the Ehrlich preparation, that the German patent rights have been withdrawn, and it is the purpose of several state health boards, including that of Massachusetts, to manufacture the preparation, and turn it over to the profession at cost, or free of charge, in needy cases.

The broadening of the scope of state and municipal health boards, in both preventive and corrective medicine, has developed the need of men with special training, and opportunities in this respect will open to those of you who will have seen special service in sanitation abroad, or who take added instruction on your return.

In industry in this country in times of peace, there has been a daily toll of injury, disease and death, comparable to the highest records of war, The old attitude of the employer is illustrated by an experience which I had several years ago. A structural steel workman had missed his footing and gone crashing down, through a building under construction, to his death. He died without relatives or friends. When I called up the large corporation which employed him, and inquired who would care for the burial of the body, I was told, "Let the city bury him." When I replied that I would furnish all of the facts to the newspapers, there was a prompt change in the atmosphere, and the corporation was eager to take up the duty of caring for its dead. Here was a man the nature of whose work required a constant mental and physical alertness during sixty seconds of every minute of his working day. One lapse or one miscalculation by himself or his fellow workmen, and his end might come. So great were the risks he took, that insurance companies would furnish protection only for exorbitant fees. If his injuries had not been fatal he could not have sued successfully for compensation during recovery, because his rights were hedged about with "willing assumption of risk" and "fellow servant" clauses which would effectually have barred him.

We have changed all this. Industries are required by law to assume responsibility, as a proper charge upon the industry, for those who become injured or diseased or who die as the result of their employment.

Employers have come to realize that they have a financial interest in the trained workman, whose protection from accident and disease is as important as the conservation of their other assets. There has developed as a result of this attitude of employers, a new branch of medical activity, having to do with the investigation of the causes of industrial accidents and industrial diseases and their removal.

In connection with the treatment of industrial accidents, public commissions have for the first time been empowered to dictate, by authority of the law, the amount of compensation which shall be paid to physicians for the care of their private patients who have suffered industrial accidents, whether the treatment be carried out in hospitals or in the privacy of the home.

In England, where lodge practice is common, the establishment of old-age pensions and health insurance has been followed by a demand for the socialization of the medical profession, as a public service. Whether the wave of socialism now gathering in Russia and penetrating Germany, will engulf England, as Henderson suggests, is a question, but one of the inevitable results of its success will be the conversion of your profession from its present semi-public position to that of a purely public service.

However, present indications are that when you return from war duty, if you do not enter one of the public services, you will be given opportunity to go into the private practice of medicine. You will be surprised, if you have not during student life observed this peculiar situation, to note the value which the public will place on your services, as measured in dollars and cents.

The spectacular character and the brilliant results of modern surgery, and the prompt improvement of patients following many surgical operations, is followed equally promptly by generous reimbursement of the surgeon by the grateful patient. This is a technical age, and men with technical ability are highly paid. The over-appreciation of the technical has naturally led to a surplus of operators, many of whom are not surgeons in the true sense of the term. The application of efficiency tests to the end-results obtained, as suggested by Codman, should ultimately serve to eliminate the unfit.

Internal medicine, requiring greater basic ability in the man who would be its master than is demanded of men in the more showy branch, pays its devotees less generously than does surgery. The thermometer, the stethoscope, and the test tube are less impressive than the scalpel, and results are usually slow and gradual, in contrast to the sudden relief which frequently follows surgical intervention.

You may be attracted to one of the specialties, in which case you will probably be highly paid. You will pick out some limited field of medicine, after perhaps several years in general practice, and as you narrow your field, the public will evince its appreciation by widening the mouth of its pocketbook.

The surgeon and the specialist are the magnates of the profession. I had in my hands a few days ago a pathetic piece of evidence in this respect. Jenner, the discoverer of vaccination, had printed a circular letter of information to the profession, describing the then new procedure of vaccination. The particular copy which I saw had been sent to Sir Astley Cooper, the most famous fashionable surgeon of his day, whose income is said to have exceeded twenty thousand pounds per annum. The interesting feature of this copy lay in a postscript over Jenner's signature, in which he apologized for daring to take the valuable time of the great man for the reading of his circular. Time's measure of the relative greatness of the men is indicated by the fact that Cooper's name is not thought of sufficient importance to appear in the Century Dictionary.

Another example of the humility of greatness is found in the story of Metchnikoff, who, while the scientific world watched the struggle for supremacy between his cellular theory and Ehrlich's humoral theory of immunity, the most masterly discussion in modern medical history, received from the Pasteur Institute, I am informed, an annual salary of three thousand francs or six hundred dollars.

The predatory classes, always on the lookout for easy money, have seen an opportunity for gain in the readiness of the public to pay the specialist generously for services. Most of the quack practitioners, therefore, advertise themselves as specialists, and you will see even subdivisions of the specialties, particularly the easy and safe branches dealing wholly with chronic conditions, erected to the dignity of cults, and, backed by abundant funds and lobbies, wringing recognition from legislatures for their so-called schools and so-called degrees.

The neurotics and the neurasthenics, the people who are self-centered to the point where they focus all of their energies on their internal mechanism, to its and their own discomfort; the people who have nothing to do, no external interests, no concern or sympathy for others and no charity,—will go out of your hands into those of the various cults, or will join the Religion of the Selfish, to your financial loss; for the selfish are usually well to do, as was discovered by that astute psychologist, Mary Baker Eddy.

With them, unfortunately, will go a group of sufferers from real diseases, whose diabetes or renal disease, lacking restraints in diet, will rapidly progress; whose tuberculosis will advance from hopeful to hopeless; whose new growth will show the inevitable extension from the operable to the inoperable stage.

You will not be robbed of the poor by the disciples of the various pseudo-medical cults, to whom charity is unknown, and whose methods of treatment(?) are intended to apply only to those who can pay for services rendered.

Most of you will, at least in the beginning, go into the general practice of medicine, the most poorly paid and most highly valued medical service which is offered to the public. General practice is criticized because many general practitioners are content to rest on their laurels, and do not keep pace with the growth of the profession. They serve only as sign-posts for the various specialists. The general practitioner whom the world admires is the man who, in spite of his small income and his long days, finds money for the purchase of medical books and journals, and time to read and digest them; who impresses the specialist, called in for unusual cases, by the accuracy of his observations, the intelligence of his diagnosis, and the up-to-date character of his methods; who is the valued guide, counsellor and friend of a countryside.

That eminent medical publicist, Dr. Richard Cabot, has said that the general practitioner must go. But what is the world to do without him? He is the medical "man in the trenches." He is called to meet at first hand the emergencies of life and death. He it is who makes plain to the amateur graduate of a first-aid course, that a seidlitz powder is a deadly thing to offer to the man whose heart is struggling through an attack of acute insufficiency, masked by symptoms of indigestion. His is the burden of coaxing back to efficient service the recalcitrant organs which are groaning under the emergency load they are carrying. His intimate knowledge of the family affairs makes him appreciate that in saving the wage-earner, he is protecting the family from a life of pauperism, with all that that means.

It is the duty of the profession not to eliminate the general practitioner, but to make more easy his pathway to progress by establishing local or county centers, with laboratory and library facilities in charge of trained medical observers, who will solve his unusual laboratory problems, helping him in searching the literature, and refer him to specialists who are willing to assist when the center authorities are at a loss. According to Professor Winslow's reports, even Russia has progressed further in this direction than we have. The recently established consulting clinic at the Massachusetts General Hospital is a local step in the right direction, but, even with the limited distances to be travelled in our State, is not readily accessible to many of our practitioners. Perhaps travelling consulting clinics, with fixed days of call at county centers, would overcome the difficulties of the present situation.

Whatever the solution may be, I am loath to believe that the world can dispense with the general practitioner's services, either now or in the future. He is, or should be, the embodiment of all of the qualities which have caused the world to call your profession blessed.

And now, a word of counsel to you, as individuals.

My advice to you in the selection of a location in which to practise, is to pick out the place in which you want to live out your life, and make yourself worthy to deserve the admiration and welcome of your neighbors.

As for your future, to paraphrase Ruskin:

If it is love and an abiding faith in mankind; if it is willingness to subordinate self to the needs of others; if it is realization of the responsibilities you have accepted and purpose to keep yourself ever fit and ready to discharge them worthily, that move you; then the Spirit is upon you, and the world is yours, and the fulness thereof.

It is my high privilege to welcome you to full membership in the medical profession, and to bestow on you the benediction of your Alma Mater. May God bless and speed you in your work.

Original Articles.

REVISED IDEAS CONCERNING FOOT DEFECTS AND ORTHOPEDIC FOOTWEAR.

By Herman W. Marshall, M.D., Boston.

The last word concerning common foot ailments has not been said yet, although too much to be comprehended readily has been recorded at the present time. There has been a deluge of special information from civil and military orthopedic surgeons, shoemakers and shoe-fitters, each pointing out many important details; but there still remains much to be done in piecing together scattered facts into a simplified, harmonious conception of the entire subject.

Furthermore, certain familiar details increase in significance with time; while other well-known facts lose some of the prominence they held when first brought to notice; and accordingly, there is a need now for sorting over our various and numerous data. The writer, in puzzling over innumerable details of the subject, has picked out special points which he thinks should be emphasized again, although many of them are familiar; and, because of their diversity, they will be presented here to the attention by listing them without trying to elucidate all their complex inter-relationships.

1. *Feet are plastic* and can be moulded gradually into many different forms, especially during earlier years of life, before bones become completely hardened. Illustrations are seen in feet deformed by the old Chinese custom of binding down the toes continuously during the growing period; also in the modern custom of wearing shoes that are too short, with pointed toes and high heels, until feet become contracted, and longitudinal arches are forced abnormally high, while anterior arches become depressed and toes deformed; or thirdly in beneficial regulations of growth by means of plaster casts and strappings in congenitally deformed feet whereby they are restricted in a way that produces more normal shapes as patients grow older.

Bones which have become completely ossified still undergo slow changes; and there is a constant turning over of the lime constituents of bone, some of the lime being eliminated continually, while simultaneously some is being laid down anew. In this way the internal structure of cancellous bone slowly accommodates itself to its shifting mechanical needs. Certain internal trabeculae become thickened and strengthened, others become thinned from absorption, and slight, slow, adaptive changes in bony shapes result from time to time, even in adults.

2. *Foot deformities are produced most commonly by continuous wear of one style of shoes.* Other less common causes include congenital defects, deformities produced by bone diseases and tumors, anterior poliomyelitis and other nervous affections, and various kinds of chronic arthritis.

3. *Results of causes operating previously for prolonged periods are shown by these most common foot deformities;* and the latter should not be interpreted primarily as causes for existing pains or weaknesses complained of; for an extremely large percentage of them are not associated with pain, and such feet are serviceable enough for ordinary requirements of life.

4. *Causes of abnormal weakness, pain, and disability are found most commonly in musculo-ligamentous weaknesses, strains or irritations.* Other causes for abnormal symptoms include

lesions of bones, joint linings, tendon sheaths, nervous structures and skin.

5. *Sharp distinctions in treatment of foot defects should be made between abnormal symptoms and foot deformities.* Both occur together very frequently, yet there may be marked defects of structure without musculo-ligamentous weakness; or, vice versa, there may be severe pain and weakness with very little deformity. Errors observed in treatment frequently are those of emphasizing unduly the various peculiarities of forms of feet, and overlooking real causes for acute symptoms, namely, those more remote obscure causes for musculo-ligamentous weaknesses and irritations. As a result of these errors, foot symptoms often are unnecessarily prolonged or aggravated by therapeutic procedures.

6. *Feet of persons in good health, who have never worn shoes, are flexible, and adapt themselves easily to innumerable unfavorable conditions,* because the latter states follow one another in rapid succession. All parts of the feet thus are alternately exercised and rested in a physiological manner, while no parts are too badly strained through maintenance of a single permanent position.

7. *Feet of persons in good health* are able to endure without injury, for variable periods of time, shoes that have pointed toes or broad ones, high heels or low ones, flexible shanks or stiff ones, shoes that are a trifle too short or long, or a trifle too wide or narrow for comfort across front parts at locations of transverse arches.

8. *Harm from high heels, pointed toes and shoes fitted too short or too narrow comes only when they are worn too much of the time.* Orthopedic shoes of most approved shape and fit are defective in one important respect, namely, that they tend to fix the feet in one position continuously, to the detriment of certain muscles and ligaments which become thereby weakened through comparative disuse.

9. *Several slightly different styles of shoes with variations in widths and flexibilities are preferable to a single shape and size of the most correct orthopedic last for individual wear,* because slight accommodative changes required in use of several different pairs of shoes of different proportions assist in retention of normal flexibility and adaptability found in barefooted races of people. One of the several styles, however, should be the usual foot-shaped orthopedic shoes.

When this ability of feet to make moderate changes without discomfort is lost, then prompt attention should be given to underlying tendencies that are developing unnoticed toward musculo-ligamentous defects.

10. *Causes of musculo-ligamentous defects* include too much mechanical use of the feet; harmful variations in blood supplying muscles and ligaments; and defective nervous control of these tissues. These three elements are found acting together in each person in normal or defective ways; and the most common defective variation is a combination of too much use with a temporary poor quality of blood.

It is correct to speak of only one defective factor in any selected instance, yet it is still more correct to recognize combined influences at work. For example, a person may fail to develop acute musculo-ligamentous foot strain after an unusual amount of exercise, or after some traumatic cause; but, if the blood becomes poor for any reason at this particular time then the same amount of exercise or an exactly similar injury may produce a strain. One physician, perhaps, will call the trouble a simple mechanical or functional strain. Another physician may point only to the vascular peculiarity, yet a more truthful interpretation includes recognition of both causes acting in combination.

11. *Vascular causes of musculo-ligamentous defects are obscure and numerous.* Some qualities of blood produce musculo-ligamentous weakness and relaxation; others cause muscular rigidity and tenderness; and many vascular peculiarities exert mixed influences so that practically these two extreme types of muscular relaxations or rigidities in a large series of cases show combinations of the two in all intermediate stages.

Furthermore, circulating substances influence bones and synovial linings of joints, as well as muscles and ligaments; and there may be additional confusions arise from adhesions forming in joints and tendon sheaths, or from reflex muscular rigidity due to irritative bacterial foci in the bones.

12. Clinically, musculo-ligamentous weaknesses or irritations, *i.e.*, acute foot strains, are noticed in the following conditions: At times after prolonged illnesses like typhoid fever, scarlet fever, measles, pneumonia, and in connection with infections of tonsils, teeth, naso-pharynx and genito-urinary tract. Cachectic states associated with cancer, anemias, chronic pulmonary

tuberculosis are often accompanied by foot weaknesses and strains. Cardio-renal disease may lead to weakening and stretching of foot muscles and ligaments. Painful foot symptoms are commonly complained of before and after childbirth, due to important vascular and musculo-ligamentous changes going on at these times. Chronic gastro-enteric troubles, constipation, and visceroptosis are remote yet frequent causes of foot symptoms.

13. *The most common vascular origin for mild transient foot symptoms* probably is found in the numerous transient mild auto-intoxications and debilities arising from combinations of overwork, worry, high nervous tension, overeating, and other accompaniments of our modern complex life.

14. *Painful foot symptoms are indicators of underlying, often unrecognized troubles, which may be more serious than the resultant foot disability.* For this reason foot troubles should not be treated locally simply, and all persons who are able should have opinions passed upon their general conditions by physicians who understand relationships which exist between foot defects and patients' general states of health. In this connection, it is well to recall that shoe retailers apparently relieve many cases of foot strain without medical assistance, but often this is because very many of these cases of foot trouble are produced and relieved by self-correcting debilities. At least, all cases which do not subside quickly should have proper medical attention in order to avoid as far as possible the establishing of very chronic resistant types of defects.

15. Practitioners' limitations in care of patients' feet are appreciated by practical shoemen, while many practitioners have still to recognize that there are some shoe retailers and shoe manufacturers whose knowledge of foot troubles locally is very complete. Urged by business competition and other causes, a few have temporarily encroached on the domain of medicine sufficiently to learn structures of feet and how feet maintain their natural shapes and functions. Furthermore, shoemen are familiar with many proportions and foot measurements which most medical men are entirely unaware of.

Their comments, accordingly, on the medical profession are interesting, and an opinion commonly expressed by them is that physicians usually are satisfied if shoes look well, have broad toes, low heels and straight inside lines. Niceties of good fitting, the importance of looseness and snugness, correct balance, the necessity of having a good variety of styles to fit from, completeness in numbers of sizes and widths are points which doctors know too little about; and defects of which are responsible undoubtedly for many unsatisfactory results. The selection of shoe fitters should be made as carefully as selections are made of physicians for treatment of foot troubles.

16. Shoe manufacturers should have the task of furnishing harmoniously graded shapes and sizes of shoes to supply adequately all important needs; but a few of them only have succeeded as yet in constructing series on correct orthopedic principles. Then, secondly, it is essential to have fitters in retail stores who have proper understandings and proper stock to fit from, and these conditions are fulfilled exceptionally rather than usually. Finally, physicians in treating feet have to know how to apply supports, correct general systemic defects, and understand possibilities and limitations of shoe fitting; and in this respect the medical profession still shows a wide range of efficiency, with understanding inadequate not infrequently, it must be admitted.

Since only one important omission or mistake is needed to impair seriously the efficiencies of other steps in ultimate success, there are obvious reasons why so many imperfect results are still obtained. We can be optimistic over the great increase in knowledge, but ought also to be reasonably pessimistic over the chasm which still divides our present grades of efficiency from real perfection.

17. *Deformities are not devoid of significance* although they represent effects of past influences rather than causes of present troubles. They do indicate that feet are working more or less at a mechanical disadvantage although pain is not present; and, while certain muscles and ligaments may strengthen enough to compensate for disadvantages of deformities so that good function still remains possible, yet these structural defects should be corrected as far as practicable, keeping in mind the relative importance of degrees of defection that are being remedied.

18. *Orthopedic corrections of foot deformities* can be as uncomfortable as repeated "breaking in" of shoes in the past which produced these structural defects. And it is unwise to omit the explanations to patients that corrective orthopedic appliances or shoes are not

designed for increased comfort, but for slowly forcing feet back into normal shapes as rapidly as tolerance will permit.

19. *Corrective apparatus should not be forced vigorously with feet that are showing symptoms of acute strain,* because muscles and ligaments then are enduring all they can, and readjustments of corrective nature are liable to be crippling in effect. Instead, strained feet should be comfortably supported with adhesive straps, blood peculiarities attended to; and, finally, when abnormal symptoms have appreciably abated, gentle beginnings made toward slow corrections of pronations, restorations of defective arches and of deflected toes.

When too short shoes, however, are causes of pain, longer shoes should be prescribed immediately, and later, when symptoms have subsided, anterior arches can be forced upward gradually again.

20. *Manipulations, exercises and massage* should not be omitted in the more chronic types of foot troubles, because they are of very great importance if properly done at right stages in restoring normal ranges of joint motions, renewing normal muscle function, and in bringing back the flexibility and elasticity of feet. Details of these measures, however, cannot be discussed in this paper.

21. *New treatments* undoubtedly will be devised in the future and may be essential for special cases; yet the large majority of foot cases are likely to be treated more successfully in the future mainly through wider spread greater efficiencies in use of facilities now at hand. Closer coöperation between shoemen and the medical profession holds possibilities for much greater success.

22. *Special situations,* confusing and apparently contradictory in nature, can be cleared up in many instances only by puzzling over the facts already established, as, for example, employment of a single style of shoes for all men in the United States Army, while on the other hand, multiple styles of footwear are advocated by most progressive shoe dealers.

There are no doubts that feet vary greatly in sizes, shapes and proportions, and that consequently one shape in lasts will not fit all feet in all respects. But, with many widths and lengths a single style can be fitted comfortably and snugly across insteps and anterior arches, while a little extra length does no material harm. This same style of last in its shorter, wider sizes, however, often produces transitory acute foot strain among army recruits who have been previously wearing shoes of various shapes; but their improved personal habits soon help to offset abrupt changes made in their footwear. After a few weeks merely a little extra broadness across toes usually becomes relatively unimportant with robust soldiers, and the only remaining menace of importance is too short shoe lengths. The latter difficulty obviously is not an insuperable one.

Customers in civilian life, on the other hand, require fittings of shoes to existing deformities and to musculo-ligamentous strengths more accurately, partly owing to demands of fashion, and partly because such customers are more likely to be debilitated or in poor physical conditions from various causes. Satisfaction of customers' whims and wishes have to be considered more carefuly than in the Army, where serviceability counts most. Aims of shoe fitters are rather useless accomplishments from an orthopedic point of view when they try to fit all customers absolutely perfectly and comfortably from the very outset; because feet may go from bad to worse regardless of excellent local conditions when underlying vascular causes are not remedied. Feet have adaptability, which is not taken into account in these aims; and shoemen do not appreciate sufficiently the importance of general medical supervision when feet begin to lose their adaptability.

At other times confusion in customers' minds arises because one physician or shoe fitter advises shoes loose across anterior arches, while others recommend shoes with snugly fitted front parts. Both bits of advice may be right, however, for the same individual, and are reconcilable upon understanding that weakened, relaxed feet require additional supports temporarily, while at other times foot ligaments and muscles whose strengths have been restored are better if unsupported. Similar explanations apply to the usefulness and limitations of stiff and flexible shanks. Comparatively few fundamental physiological principles, including the need of alternate periods of rest and exercise, of effects of too much use and disuse, of too much and too little support, of natural adaptability and plasticity of feet, and importance of underlying vascular conditions will account satisfactorily for a multitude of the combinations observed which are individually perplexing.

23. *Surgical treatments for deflected toes* undoubtedly give most satisfactory results in many long-standing cases of severe grade; but it is necessary to sound a note of warning also that a very large number of hallux valgus patients can be equally improved by non-operative methods. As our knowledge of the great possibilities and limitations of surgery has increased, there have been wonderful advances in this special branch of medicine; and very few bad results are observed now after surgical treatments for deflected great toes. This fact, nevertheless, should not be allowed to obscure the comparative merits of other forms of treatment.

While it may be perfectly safe to operate on toe deformities, and almost surely relieve patients to some degree finally, yet the simple expedient of wearing proper shoes with corrective pads and cuffs will relieve the majority of mild cases without surgically damaging the ligaments of transverse arches of feet, and without disabling patients as operations do. Not toe deformities alone, nor possibilities for safe surgery only have to be considered; but functional foot defects which are represented have to be judged mainly, if the highest aim of medical practice, namely, the welfare of patients, is adhered to most strictly.

DISPENSARIES IN MASSACHUSETTS, PARTICULARLY IN BOSTON.

BY MICHAEL M. DAVIS, JR., PH.D., BOSTON,
Director of the Boston Dispensary.

THE Social Insurance Commission of Massachusetts, appointed in 1917, was interested to ascertain the extent to which dispensary service has grown in Boston, and elsewhere in the Commonwealth; the proportion of the population which dispensaries are reaching; the social and economic classes reached; and the kinds of medical service which are provided. The data in this paper were collected at the request of the Commission, and much of the text will appear as an Appendix to its Report.

Dispensaries and out-patient departments of hospitals are generally philanthropic institutions. They usually charge small fees, for instance, twenty-five cents or ten cents per visit, and similar amounts for medicines, etc. These fees are generally remitted in whole or in part when the circumstances of the patient appear to render it necessary.

With the assistance of the State Board of Charity, to which all incorporated charitable institutions must report annually, a list of dispensaries and out-patient departments was secured, and the general statistics of their work ascertained. Table I shows a list of 22 dispensaries and out-patient departments, in Boston, and the total attendance, or number of "visits" made by patients to the clinic, also the number of *new* patients received during the most recent year for which statistics are available. This was usually 1916. The data are not complete, practically all of the tuberculosis dispensaries being omitted. Several small dispensaries are also not included. This renders the figures below rather than above the truth. Since this paper has reference primarily to general medical care, the omission of tuberculosis clinics would not affect conclusions based on these data.

It will be observed that the total annual attendance at these dispensaries was nearly 900,000, and that the number of new patients was over 250,000. To ascertain the number of different individuals we must bear in mind that there are a certain number of persons who are treated at more than one dispensary. Investigations published in *The Modern Hospital* of 1916 (Vol. vii, p. 359) indicate that this overlapping is small, not over 10%, and probably not over 5%. On the other hand, the number of "new patients" at the dispensaries during a year does not equal the number of different individuals during the same period, since many old patients who were treated during a previous year, keep on coming. A total attendance of 895,000 probably represents at least 300,000 different persons. Deducting 10% for overlapping, we have 270,000. Not all of these are from the city of Boston, but the great majority are. Certain of the dispensaries receive patients from Boston only; some, like the Massachusetts General Hospital and the Children's Hospital, receive a considerable proportion from outside the city. Only a few of the annual reports of the institutions state the proportions exactly, but it is very probable that fully three-quarters of the attendance is from within the city limits. Three-quarters of 270,000 is 202,500. It is safe to say that 200,000 residents of Boston receive treatment annually at the dispensaries of the city. This is one-quarter of the total population.

It must not be inferred that this vast number of persons received all of their medical service through these dispensaries. Many of them receive part of their medical service from a private physician, and come to the dispensaries for special service only. The three departments which correspond more or less to the field covered by the general practitioner are the medical (adult and children's), and the general surgical. At the Out-Patient Department of the Boston City Hospital, 68% of the new patients come to these three clinics, and 32% come to clinics dealing with specialties. At the Massachusetts General Hospital Out-Patient Department, 58½% of the new patients come to the three general clinics, and 41½% to the specialties. At the Boston Dispensary the proportion is reversed, 39% coming to the general and 61% to the special clinics. The average for these three largest institutions is 55% of new patients in the three general clinics, and 45% in the specialties. But a considerable proportion of patients (certainly over 10%, and probably 25%) in the medical, children's and surgical clinics, come to see a specialist. We may say with assurance that more than half of all the patients at dispensaries come to secure service such as requires a specialist rather than a general medical practitioner. In view of the high cost of specialist service at private office rates, this proportion is significant.

There are, in fact, large numbers of families who can and do employ a general practitioner for ordinary ailments, but who cannot afford to pay for the work of an oculist, or a throat specialist or a specialist in the diseases of children, etc. Also, it is a matter of common knowledge to all hospital administrators, that a certain proportion of dispensary patients are referred by doctors, mostly general practitioners, who wish their patients to have specialist service, for which the patient cannot pay.

All the dispensaries on the list aim to reject patients who can afford to pay a private physician for the care they need. The accurate enforcement of this policy is not always easy, for obvious reasons. Investigations have indicated, however, that the proportion of applicants for treatment at the Boston Dispensary and the Out-Patient Department of the Massachusetts General Hospital, who could pay for the medical service which they need, is very small, less than 3%. (See Annual Report, Boston Dispensary, 1915, p. 46.)

From what social classes does this army of 200,000 patients come? The great bulk are wage-earners or their dependents. The family incomes have been tabulated for 1196 families, taken consecutively from the patients in the Boston Dispensary during September, 1917, and 191 families from the Out-Patient Department of the Massachusetts General Hospital, taken during November.[*] Statistics of income have also been prepared for 1457 individual wage-earners, at the Boston Dispensary, taken during August, 1917. The family incomes, of course, include supplementary earnings of adults or children other than the chief wage-earner. The Massachusetts General Hospital figures agree quite closely with those from the Boston Dispensary, although the number of cases from the Massachusetts General Hospital is rather small on which to base any conclusions.

Taking all these data together, we find that about 40% of the families of these dispensary patients are earning less than $15 a week; about 45% earn between $15 and $20, and 20% to 15% over $20 a week. In other words, a little less than half of these families have an income of $800 or less a year, and about the same number have incomes between $800 and $1000 a year.[†]

A highly significant figure is the number of cases known to be receiving material aid, *i.e.*, money, food, clothing, fuel, etc., at the time when they were dispensary patients. The proportion of families thus aided by charity was less than 3% among 1196 Boston Dispensary families.[‡] It is safe to say that not over 5% of the patients at the dispensaries are usually in receipt of material aid from charitable agencies. In other words, the great bulk of the families whose members are cared for by the dispensaries of Boston are able to meet the ordinary expenses of maintaining a family during health, but they cannot meet the expenses of illness and pay the cost of medical service in addition.

Among the same group of patients of the Massachusetts General Hospital and the Boston Dispensary, it appears that a majority of families have three children or more; that the proportion of large families is not, however, unduly great; that, in fact, the size and constitution of families is not very different from that which would be found in the community as a whole.

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[*] Detailed tables are printed in the Appendix to the Report of the Social Insurance Commission, giving the figures on which these and the following statements are based.

[†] These estimates of income, based on usual weekly earnings, are probably conservative, as most working people have periods of unemployment which, even during the present prosperous times, would amount to something through the year. The figures, moreover, correspond quite closely to the general levels of wage-earners' incomes, which the reports of our State Bureau of Statistics show to prevail in this community.

[‡] Reference is made later to a special intensive study of a number of families, made by the Social Service Departments of the Massachusetts General Hospital, Boston City Hospital, Psychopathic Hospital, and Boston Dispensary, and including 159 cases. It was found that only 49 out of these 159 families, or less than 30%. were in receipt of material aid, although Social Service Department cases are those who present some family problem, or distress other than medical need.

Previous to the war-time régime of abnormally high prices, an income of $800 a year, for a family of average size in Boston, was estimated by several careful students to be barely sufficient for the minimum physical necessities, and gave no margin for the emergency of illness. An income of $1000 a year, for a family of five or six, gave only a very slight margin. Thus, even before the war, families receiving such incomes as these dispensary patients possess, could but just support themselves during health, but could not bear the burden of illness without either deprivation of food or other necessities, or else recourse to charity. At the present time, the above estimates are too low, for wages have, on the average, risen much less than the cost of living. The incomes of these dispensary patients are not lower than are shown by our State Bureau to prevail among many wage-earning groups. They can often pay for medical service in an emergency, but out of an income of $1000 or $1200 a year a family of five or six persons cannot meet the expense of specialist service, nor of any long-continued illness. When the illness is of the chief wage-earner the condition of the family usually becomes serious.

The question has been raised whether, under the present system, the patient frequently delays in getting medical treatment long after the onset of his disease. Data were secured on this point from 1529 patients at the Boston Dispensary and 197 at the Out-Patient Department of the Massachusetts General Hospital—a total of 1726. Out of the 1726, 1236 had had no medical care previous to coming to the clinic, and 435 of these, or 35%, had been suffering from their ailment for three months or more before seeking the clinic's care. One hundred and sixty-three additional cases, or 13% out of the same 1236, had delayed from one to three months. Out of the whole 1726 cases, 350 had waited from a week to a month, while 430 had gone to the clinic within a week from the time they felt their illness.

These figures can be better understood when delay in securing treatment is tabulated in connection with particular diseases. This has been done for 1529 Boston Dispensary cases. Where diseases are such as cause much pain or discomfort in their early stages, such as minor surgical lesions, cuts, burns, etc., or irritations of the skin, treatment appears to be sought pretty promptly. On the other hand, with diseases that cause less trouble to the patient in the beginning, but which are often likely to be more serious, there is frequently more delay. Thus 15 out of 29 patients with tuberculosis were conscious of illness over three months before they sought any kind of treatment, and 7 waited a whole year; 15 out of 37 cases of syphilis waited more than three months, which is past the period when the disease can be most effectively dealt with; 40 out of 69 of disorders of the circulatory system (mostly heart diseases), and 10 out of 21 cases of kidney disease, waited over three months.

Of the minor diseases of the ear, nose, and throat, not requiring operation, 48 out of 75 cases waited less than one month, while out of 152 more serious cases, requiring surgical operation, only 43 cases came within a month, and 98 cases waited over three months. The same contrast appears in "general surgery," since the non-operative and usually minor cases appear to have waited less time before seeing a doctor than the operative cases, which are generally more serious.

The data collected also show the proportion of patients who had some medical care previous to coming to the clinics, and whether this care was secured from a private doctor or from another medical institution (usually a hospital). Three hundred thirty-nine cases (out of 1726) had previously been to a private doctor. The usual reason given for leaving him was that they "had no more money to pay him." A considerable number of cases are referred to the clinics by the doctors, for consultation or for care by a specialist for which the patient could not pay at private rates.

The fact that of these 1726 cases, only 339 had had a private doctor, whereas 435 persons had waited three months or more before getting any medical treatment, suggests that private medical practice is not sought by a large proportion of people because they feel they cannot afford it. It also indicates that there are many persons who either do not know of dispensaries, or who do not wish to accept medical charity. Under the best conditions, people will often delay in going to a doctor, even if a doctor is free. The figures regarding delayed treatment must be interpreted with this caution in mind.

The Social Service Departments of the four institutions above mentioned rendered reports of 159 cases which had been individually studied. Among the points taken up was the extent of any form of insurance in these families. It was found that sickness insurance was infrequent. Only 23 out of 159 families carried any sickness insurance. One hundred and twenty-four stated that they had none; in 12 cases no data on this point were secured. *Life* insurance was fairly frequent, 60 families carrying some insurance on one or more members, 78 carrying none, and 20 furnishing no information on this matter. This "life insurance" is usually industrial insurance on the weekly-payment plan, providing small amounts on the death of the insured person. The majority of the 60 cases pay 50 cents a week or more for this insurance.

A comparison of the figures secured in this study may be made with the information gathered in California by the Social Insurance Commission of that State in 1916, and published in their Report during the early part of 1917: "Among 2587 patients applying at dispensary clinics in San Francisco, only 53 were dependent upon charity, public or private, for their support" (page 43 of Report). In addition, there were 137 cases of unemployment where dependency was imminent, making a total of 190 cases, or 7%, in which the "application for free treatment at the clinics in San Francisco could be attributed to the fact of dependency or unemployment" (page 44). In 42% of the 2587 San Francisco cases the family income was $14 or under a week, which compares closely with the 36% found among the Boston Dispensary patients, and 43% among the Massachusetts General Hospital cases. The studies in Boston and San Francisco—the two extremes of the continent—are alike in showing that a large number of self-supporting wage-earners of small incomes, not otherwise dependent in any sense, are seeking medical assistance at dispensary clinics. The California Commission accounts for this situation as follows (page 46 of their Report):

> "It would be futile to ascribe such seeking (of medical care at the clinics) to a total lack of self-respect and an endeavor to get something for nothing on the part of these individuals. The number of them alone would be sufficient to refute such a conclusion. Aside from this point, however, the interviewing and observation of 1000 cases would convince any one that there is a more far-reaching and direct cause responsible. The growing attendance at the free clinics is accounted for by the fact that they can there get from physicians and surgeons, whom they know to be men and women of reputation, specialist care, which they cannot possibly afford to purchase. There is no reason to suppose that if there were a way by which they might buy this same attention for a small price within their means we should still find the bulk of them frequenting the 'free clinic.'"

In the city of Boston we found that a quarter of the population receive care at dispensary clinics annually. A marked contrast appears between Boston and the remainder of the Commonwealth. From data furnished by the State Board of Charity we find that in Massachusetts, outside of Boston, there are only 30 dispensaries and out-patient departments. The total number of visits paid by patients to these 30 dispensaries and out-patient departments was 138,000 for the last year during which reports were available (usually 1916). The list of institutions is given in Table II. The number of new patients reported was 32,000, and the probable total number of different individuals treated was between 50,000 and 60,000. Boston has one-fifth the population of the Commonwealth, but between three and four times as many dispensary patients as all the other cities and towns in the Commonwealth put together. This is true in spite of the fact that Boston has more physicians in proportion to its population than the rest of the State. The fact that most of the tuberculosis dispensaries are omitted from the lists would not substantially affect the contrast between Boston and the rest of the Commonwealth.

Do these facts mean that Boston is over-supplied with facilities for charitable medical care? Or does it mean that the remainder of the Commonwealth is under-supplied? The statistics gathered do not furnish an answer to this inquiry. There can be little doubt that many communities in Massachusetts contain large numbers of wage-earners whose incomes are no higher than those found among dispensary patients in Boston. The question may at least be raised whether no need exists, in such communities, for some system of organized medical care, particularly in the specialties, such as the dispensaries of the metropolis in a measure provide?

The organizations of dispensaries as found in Boston would, of necessity, have to be adapted to the conditions in smaller communities. In a large city specialists in all the different branches of medicine are usually found, but they are relatively much fewer in smaller places. The large dispensary, particularly if attached to an important hospital, provides medical advantages to the physicians on its staff, by affording facilities for diagnosis and consultation, which a small dispensary cannot offer. Connection with a medical school is also of value to a physician, and is not possible except in a city which has one or more medical colleges. For all these reasons it would be much more difficult and often impossible to secure in small communities anything like the amount of volunteer medical service which is found in the dispensaries of Boston. It may, indeed, be questioned, whether the custom of depending upon volunteer medical service in dispensaries has not reached a point at which the system threatens to break down by its own weight. In any case, there can be little doubt that any considerable expansion of dispensaries in the smaller communities must be based upon a system of remunerated medical services, and that such remuneration is necessary, both in justice to the medical profession and in order to have sufficient and efficient service in the clinics. One of the disadvantages of the present system in the dispensaries of Boston is the fact that almost all the clinics are held during working hours, so that wage-earners coming to the dispensaries lose time and money. So far as dispensary service is to be for the benefit of employed persons, it should include, in Boston and elsewhere in the Commonwealth, a reasonable proportion of clinics held in the late afternoon or evening.

TABLE I.

DISPENSARIES AND OUT-PATIENT DEPARTMENTS IN BOSTON.

NAME OF INSTITUTION	TOTAL VISITS	TOTAL NEW PATIENTS
Berkeley Infirmary	5,075	782
Boston City Hospital (including Relief Stations)	221,267	86,922
Boston Dispensary	118,918	24,505
Boston Lying-in Hospital	7,388	1,632
Carney Hospital	48,111	18,965
Children's Hospital	44,405	9,283
Denison House	4,848*	1,616
Dispensary for Women	10,111	1,093
Dorchester Relief Society	1,000†	300†
Forsyth Dental Infirmary	29,186	17,060
Jamaica Plain Dispensary	1,326*	442
Lincoln House Association	5,778*	1,926
Mass. Char. Eye and Ear Inf'm'y	76,017	30,698
Mass. General Hospital	201,375	31,061
Mass. Homeopathic Hospital	44,094	12,745
Maverick Dispensary	8,301	2,052
N. E. Hospital for Women and Children	6,012*	2,004
Peter Bent Brigham Hospital	36,523	8,536
St. Elizabeth's Hospital	8,713	2,936
Salvation Army (Rescue Home)	300*	100
Woman's Home Miss'y Society (Hull Street Dispensary)	16,643	5,548
TOTAL	895,391	260,206

NOTE.—These figures do not include some small dispensaries and also omit the City Tuberculosis Dispensary. The number of "new patients" is not the same as the number of *different individuals* treated.

* In certain cases which are marked with an asterisk (*) the reports of the institutions as furnished to the State Board of Charity did not contain the number of visits and in certain other instances they did not contain the number of new patients. Where either figure was given the other has been estimated according to the rule that the number of visits is usually not less than three times the number of new patients.

† Estimated.

TABLE II.

DISPENSARIES AND OUT-PATIENT DEPARTMENTS OF HOSPITALS OUTSIDE OF BOSTON.

NAME OF INSTITUTION	TOTAL VISITS	TOTAL NEW PATIENTS
Brockton Hospital Company, Brockton	1,660	690
Free Hosp. for Women, Brookline	8,124	1,920
Cambridge Hospital, Cambridge	8,484	1,420
Rufus S. Frost General Hospital, Chelsea	1,658	999
Clinton Hospital Association, Clinton	1,344	448
Framingham Hospital, Framingham	236	135
St. Anne's Hospital Corporation, Fall River	1,758	586
Union Hospital, Fall River	30.529	3.998
Addison Gilbert Hospital, Gloucester	250	272
Hale Hospital, Haverhill	177	59
Ladies' Union Charitable Soc. (Lawrence General Hosp.)	5,157	1,719
Lowell Corporation Hospital, Lowell	17,856	4.716
St. John's Hospital, Lowell	5,645	1,766
Ludlow Hospital Soc., Ludlow	2,142	487
Lynn Hospital, Lynn	13.691*	5,642*
Malden Hospital, Malden	816	272
Melrose Hospital, Melrose	601	299
Milford Hospital, Milford	219	198
Glover Home and Hospital, Needham	20	20
Anna Jacques Hospital, Newburyport	626	374
Cooley Dickinson Hospital, Northampton	383	99
Hillcrest Surgical, Pittsfield	5,296	883
Salem Hospital, Salem	6.100	1,527
Somerville Hospital, Somerville	17.568	608
Springfield Hospital, Springfield	1.386	462
Morton Hospital, Taunton	100	56
Waltham Hospital, Waltham	404	433
Noble Hospital, Westfield	36	12
Memorial Hospital, Worcester	11.385	3,578
TOTAL	143.651	33,678

NOTE.—The tuberculosis dispensaries are not included.

* Same footnote as to Table I.

SUMMARY.

Twenty-three dispensaries in Boston treat 200,000 persons annually, or one-quarter of the population of the city. In all the remainder of the Commonwealth there are only about thirty dispensaries, receiving altogether only 50,000 to 60,000 patients a year. Facts gathered concerning certain groups of dispensary patients in Boston indicate that the bulk are from self-supporting families with incomes similar to those possessed by the majority of wage-earning families in general; and that these families, while able to meet their ordinary expenses, cannot provide for the emergency of sickness nor pay sufficient for the medical service which they require, to secure it at private physicians' rates. Delay in obtaining needed medical treatment after the onset of disease is frequent, especially in diseases which begin insidiously, even when they are serious. Protection to the wage-earner or his family by means of sickness insurance is infrequent. The present dispensary system, while providing greatly-needed treatment, both in general medicine and surgery and in the specialties, has the disadvantages of depending upon volunteer medical service, and of being usually inaccessible to wage-earners except during working hours.

ON THE POSSIBLE NATURE OF MEASLES.

By Leverett D. Bristol, M.D., Dr.P.H.,
Augusta, Me.,
State Commissioner of Health.

Concerning the nature of the disease agents which give rise to the acute exanthemata, Von Jürgensen[1] said: "Since the methods which serve for the demonstration of pathogenic microbes fail us here, we are justified in concluding that we have to deal with something of a different nature. We have no ground, however, for assuming that this different 'something' is not a living organism, since every argument favorable to a belief in a *contagium vivum* as the cause of infectious diseases in general applies in full force to the acute exanthemata."

Many years ago Jenner[2] asked the question in regard to measles, scarlet fever, etc.: "May we not conceive that many contagious diseases, now prevalent among us, may owe their present appearance not to a simple but to a compound origin?"

In presenting an hypothesis that scarlet fever and the other acute exanthemata may be due to varieties of bacterial anaphylaxis depending on various well-known micro-organisms, I suggested in a recent communication[3] that the acute exanthemata may depend on something more than mere primary infections with bacteria. I believe that the evidence points to a streptococcic anaphylaxis as the "compound" cause of scarlet fever.

Measles, also, may be nothing more than the manifestation of an anaphylactic intoxication following sensitization with a well-known microorganism. In spite of the fact that measles is the most prevalent and widespread disease to which human flesh is heir, its cause has not been explained by finding or assuming any simple microbic agent. Either the causal agent is one which is unrecognizable by our present methods of examination and diagnosis—a rather hopeless outlook—or the cause is so simple in its explanation that we have overlooked it.

It may be said that measles is, primarily, an acute respiratory disease. That the organism *par excellence* of acute respiratory disease is the pneumococcus will be admitted by most authorities. Is the pneumococcus guilty of being the prime cause of measles? Examine the records of our Army camps. Is it not suggestive that measles and pneumonia seem to closely coincide in number of cases, seasonal prevalence, mode of spread, communicability, etc.?

An account given by Duncan[4] of a recent epidemic of measles and pneumonia at Camp Wheeler is most interesting in this connection. In point of time the measles curve and pneumonia curve almost coincide. There were 701 cases of pneumonia and 2939 cases of measles. Of the 701 cases of pneumonia, 312 (44.51%) were preceded by measles, while 389 (55.49%) were not preceded by measles. 10.6% of the 2939 measles cases developed pneumonia. Duncan says that "the two diseases occurred in different parts of the camp at about one and the same time, showing thereby that a common factor present at the same time in different parts of the camp had to be considered." The pneumococcus as the etiological agent in both diseases would explain many of the facts brought out.

From the standpoint of general factors such as annual, seasonal and monthly incidence curves, it may be said that measles and pneumonia correspond. Sporadic cases of each disease exist in nearly every community, and each may take on epidemic proportions. So far as geographical distribution is concerned, it is known that both diseases are ubiquitous. In civil life as well as in Army life pneumonia is now looked upon as a highly communicable disease, for which isolation and disinfection are as important as in cases of measles.

Susceptibility to both diseases and virulence of the causal agents seem to vary considerably from time to time. Both diseases have as predisposing factors—crowding, poor ventilation, and the promiscuous spread of mouth and nose secretions.

Both measles and pneumonia are transmitted chiefly by direct contact, and the infectious agent of each has little vitality outside the body. Through the air zone of droplet infection due to coughing, sneezing, talking, laughing, etc., both diseases may be transmitted easily.

Before proceeding further it may be well to compare the symptoms and signs of measles with those of serum sickness, which is an admitted example of anaphylaxis. Following is an outline of the symptoms and signs common to these diseases.

Table I.

Characteristics	Measles	Serum Sickness
Incubation period	10 days (average)	10 days (average)
General malaise	Present	Present
Fever	Present	Present
Eruption	First in mouth (Koplik spots). Spreads to skin of face and then over entire body. Has a variable appearance. Severe itching.	First around site of injection and then spreads over body. Has variable appearance. Often indistinguishable from measles rash. Severe itching.
Edema	Present	Present
Lymph adenitis	Present	Present
Albuminuria	Frequently present temporarily	Frequently present temporarily
Blood changes	Early leucocytosis and later leukopenia	Early leucocytosis and later leukopenia
Protection	One attack protects for variable period of time	One attack protects for variable period of time (antianaphylaxis)

It is noticeable that in serum sickness there is little or no evidence of the various inflammatory lesions in the conjunctivae, nose, mouth, and throat, which are commonly found in measles. This may be interpreted by assuming that the possible anaphylaxis of measles is a natural one following the bacterial infection in the conjunctivae, nose, mouth and throat as portals of entry, while serum anaphylaxis is artificially produced with its chief local signs around the injection site. On the other hand, congestion of the conjunctivae and other membranes is frequently associated with serum disease.

There is nothing in the various experimental results obtained by many investigators which is incompatible with the above explanation of the nature of measles. The numerous instances in which the inoculation of filtered or unfiltered blood, or mouth or nose secretions, from cases of measles to apparently normal individuals (or to monkeys) have resulted in transmitting the disease, may be explained by assuming the passive transference of a hypersensitive state (passive anaphylaxis) through blood serum, or the active carriage of the micro-organism from one individual to another who has been previously sensitized.

About two years ago I carried on a brief investigation to test my original hypothesis as to the nature of measles. On account of other work, this investigation has been more or less interrupted until quite recently.

Realizing that the buccal mucous membrane is one of the earliest points of attack in measles, and that the characteristic lesions (Koplik spots) first appear on such membranes, it was decided to make a careful microscopic and cultural examination of these membranes in various stages of measles. Twenty-four sporadic cases occurring in the city of Boston were studied, and form the basis of this preliminary report.

Sterile glass slides, swabs, and tubes of media were used in each examination. The patient was placed in such a position and light that a good view of the buccal mucous membrane could be obtained. Using care not to touch the lips, tonsils, or other parts of the mouth except the insides of the cheeks, sterile swabs were rubbed with considerable force over the mucous membrane. For each case three different swabs were used. The first was inoculated onto Löffler's blood serum, the second into glucose broth with a reaction of 0.3 to 0.5 acid to phenolphthalein, and the third was smeared over a sterile glass slide which was then fixed by heat. The cultures were incubated in an inside vest pocket until they could be placed in a laboratory incubator (usually within one-half hour). At the end of 24 hours, subcultures were made in various media, especially tall tubes of glucose agar (previously boiled to expel the air) and into tubes of ascitic fluid—kidney media with a layer of paraffin oil for the purpose of determining possible anaerobic organisms. Smears were stained by Gram's method and counterstained with safranin. No attempt was made to differentiate between types of pneumococcus.

As a result of these preliminary tests, it was found that all cultures showed the presence of pneumococci. Pneumococcus was grown in pure culture from fifteen. From the remaining nine cases pneumococci mixed with other pathogenic organisms such as staphylococci, streptococci, and mic. catarrhalis were cultivated. In the smears various mouth organisms were found, but in most cases the pneumococcus prevailed in largest numbers, especially within the phagocytic cells.

The predominance of the pneumococcus in many of the smears and cultures examined is certainly suggestive, and the additional finding of several pure cultures of pneumococcus adds strength to the opinion that the measles stomatitis in these cases was due chiefly to this organism. The fact that pneumococci may frequently be found in the mouths and saliva of apparently normal individuals prevents any positive deduction in this regard.

Of more importance than the prevalence of pneumococci in cultures from the buccal mucous membrane, is the finding in the smears examined of a very definite epithelial (endothelial) phagocytosis of pneumococci. If we are to give credence to our theories of positive chemotaxis, and believe that phagocytosis is an active defense of the body cells against attacks of bacteria, etc., we must assume that in the above instances the pneumococci were the invading hosts and that they were present in more than an incidental way. In these cases the evidence points to an active invasion of buccal mucous membranes by pneumococci, and an equally active defense on the part of the tissue cells against pneumococci.

In addition to verifying the above ideas and findings the writer is undertaking experiments to determine the possibility of using simple anaphylactic skin tests for the diagnosis of measles and scarlet fever.

The value of prophylactic streptococcus vaccines for the prevention of scarlet fever has been demonstrated by Gabritschewsky[5] and other Russian workers, as well as by Watters.[6] Along this same line, experiments are being attempted by the writer to determine the value of prophylactic injections of pneumococcus vaccine to prevent measles. In this connection, however, it must be kept constantly in mind that the process of desensitization, or of bringing about an anti-anaphylactic state, may in some cases first result in an actual anaphylactic condition with serious symptoms. In from ten to fifteen per cent. of persons who have been given the prophylactic streptococcus vaccine, a scarlatiniform eruption appears at the site of injection and often extends over the entire body. This may be associated with fever and all other symptoms of scarlet fever. Unless these are all coincidental cases of scarlet fever (an unwarranted assumption), it must be admitted that true scarlet fever in man may be thus artificially produced in a hypersusceptible individual, and it constitutes one of the strongest arguments for the theory that scarlet fever is the result of a streptococcic anaphylaxis.

It would seem advisable to use pneumococcus vaccines in the prevention of pneumococcic infections, and anaphylaxis, in both the Army and civil life. Military authorities are beginning to agree that vaccination with pneumococcus probably offers a better means of preventing the spread of pneumonia than does isolation of cases. It will most certainly be interesting to determine whether or not measles, also, may be decreased in its incidence in Army camps, following judicious prophylactic injections of pneumococcus vaccines.

That measles is nothing more than the manifestation of a pneumococcic anaphylaxis is worthy of consideration, as is also the suggestion that scarlet fever is dependent on a streptococcic anaphylaxis.

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[5] Gabritschewsky: Cent. f. Bakt. Orig., 1906, xli, 719 and 844; Berl. klin. Woch., 1907, xliv, 556.
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Book Reviews.

The Pathology of Nephritis. By WILLIAM OPHÜLS, California, Stanford University.

This monograph on the pathology of nephritis is illustrated by 32 consecutive cases and consists, primarily, of reports of these cases, pathologically grouped and discussed. Nephritis is classified on this basis into acute, subacute, subacute and chronic in children, and chronic. Only the glomerular form of the disease is considered. The author believes it due always to a bacterial infection, most commonly with members of the streptococcus family. The continuance of the disease is often due to a focal infection elsewhere. Edema, hypertension, and arterial stenosis are to be regarded as associated incidents or manifestations, due to the fortuitous action upon other tissues of the same cause, which injures the kidneys. The work is illustrated with 64 microscopic plates, and is a useful contribution to the pathology of nephritis.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the general editorial charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume II, General Surgery. Edited by JOHN B. MURPHY, A.M., M.D., LL.D., F. R. C. S. England (Hon.), F. A. C. S., Professor of Surgery in the Northwestern University; Attending Surgeon and Chief of Staff of Mercy Hospital, and Columbus Hospital; Consulting Surgeon to Cook County Hospital and Alexian Brothers Hospital, Chicago. Series 1916. Chicago: The Year Book Publishers.

This small (five by six) familiar volume is of course the final one edited by Dr. John B. Murphy. This fact alone increases the reader's interest and awakens recollections of the dead editor. Dr. Murphy has written a brief introduction of four pages: this corresponds to the conclusions which sometimes are, and always should be, placed at the end of a surgical monograph. In this volume they come at the beginning, and offer an excellent bird's eye view of the most important contributions to surgery during the previous year: a summary of progress, in fact.

It is quite impossible to review in detail this solid little book of 600 pages. It seems very complete, admirably condensed and satisfactorily illustrated. Accurate references to original papers are given under the head of each author who is quoted. The editor's comments, always brief and unequivocal, are enclosed in parentheses.

The book is an extremely satisfactory summary of recent surgical work. It is recommended to all surgeons, without reserve.

UNIVERSAL MILITARY EDUCATION. By LUCIEN HOWE, Fellow of the Royal Society of Medicine; Member of the Royal College of Surgeons. New York and London: The Knickerbocker Press.

This volume is a sequel to the author's "Brief for Military Education in Schools and Colleges," published last year. Its advocacy of universal military training is chiefly of interest from the medical standpoint, on account of its relation to physical education. The author advocates the adoption of the Swiss system, or some modification thereof, in the United States, and this monograph is an exposition of his reasons and arguments. Whatever the personal attitude of physicians on this subject, this book is commended to their reading, for the pertinence of its observations and comments.

Aids to Bacteriology. By C. G. MOOR, M.A. (Cantab.) F.I.C., and WILLIAM PARTRIDGE, F.I.C. Third Edition. New York: William Wood & Co.

The previous editions of this volume on bacteriology in the "Student's Aids Series" have been reviewed in the JOURNAL. This third edition, though it chronicles no notable discovery, represents a considerable extension and consolidation of previous knowledge on this subject. The conditions of military surgery in the European War have emphasized the important pathogenic possibilities of many anaerobic organisms. Meningitis as a disease of encamped troops has increased in importance, and the authors have extended their articles upon it and added an appendix. In another chapter is collected a summary of what is known about the filterable viruses, anaphylaxis and the preparation of vaccine. In discussing the anaerobic organisms mentioned, particular emphasis is given to the relative values of various antiseptics in sterilizing contaminated wounds. A few terminal chapters are devoted to the bacteriology of sewage, shell fish, meat, soil, air, milk and water, and to the more peaceful relations of bacteriology to agricultural methods in soil sterilizations, and in nitrogen fixation. The volume should continue its useful position in the series of manuals to which it belongs.

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INFECTIVE JAUNDICE AND WEIL'S DISEASE.

A CAREFUL gathering together of the various articles contributed by medical officers on toxic and infective jaundice and Weil's disease gives a very interesting study of the points of especial importance, and adds appreciably to our knowledge of the pathology of the liver. Of the three types, toxic jaundice, which has become familiar among munition workers, may be put aside for the moment. As for infective or spirochetal jaundice, there is an increasing tendency to differentiate it from Weil's disease. In some of the earlier reports, notably that by Stokes, Ryle and Tytler, which appeared in the *Lancet*, January 27, 1917, infective jaundice is regarded, both historically and clinically, as virtually the same disease as that described by Weil. Yet there seems to be a strong probability that the two diseases have clearly defined differences. On this point it is noteworthy that Weil himself has recently expressed a strong opinion (*Deutsche med. Wochenschrift*, 1916). He states that the cases observed by many writers are distinct from those which he has described.

Further information has only confirmed what he says as to the causes and symptoms of infective jaundice. On the Italian front, for example, Sampietro (*Annali d'igiene*, 1917) observed many cases which differed from Weil's disease in being relatively benign, in the absence of fever and albuminuria. Physicians, who before the war have seen cases of Weil's disease, will readily admit it is a serious form of icterus, with enlargement of the spleen and nephritis, or, as some writers like to add, with evidences of systemic infection. It rarely exists in an epidemic form, though many cases have occurred at one time in summer, in troops after swimming exercises and after eating fatty foods. According to Bäumler (*Muenchener med. Wochenschrift*, October 17, 1916) icterus is nearly always present as well as splenic enlargement, fever and nephritis. It has been known for some time that Weil's disease is peculiarly an affair of hot weather, youth, the male sex, food and swimming, all of which, according to Hecker and Otto (*Deutsches Archiv für klin. Med.*, 1892, p. 232) suggest an infection through the mucous membrane of the nose and throat and the alimentary tract.

So far as the German authors believe, Weil's disease is not caused by the Spirochaeta icterohemorrhagica of Ita and Inada, nor by the spirocheta of Hübener and Reiter (*Berliner klin. Wochenschrift*, 1916, p. 131). In fact, there is no evidence which seems to fit in with the theory that the infective agent of Weil's disease is a visible organism. This point is very clearly brought out in the most recent work on the differentiation of the two forms of jaundice. In the January issue of the *Journal of the Royal Army Medical Corps*, Colonel Martin, F.R.S., states that the distinction may be thus expressed: "In the spirochetal disease, in addition to hepatitis and jaundice, hemorrhages and an acute nephritis occur. It has a mortality of twenty to thirty per cent. and is apparently dependent upon man's association with rats for its propagation. The Gallipoli disease was much milder, was apparently more infectious, and there was no reason to suppose that rats contributed to its dissemination. Nevertheless striking analogies occur." In the cases of this jaundice, Colonel Martin adds, no blood parasites were found in films.

Another very uncertain factor in spirochetal disease appears to be the jaundice. On this point the best opinion is divided. According to Schott (*Muenchener med. Wochenschrift,* October 24, 1916) it occurs in nearly all cases. Martin and Pettit, on the other hand, observed it in only fifty per cent. of the cases in the French camps (*Bulletin de l'Académie de Médecin,* October 10th, 1916). The British, French and Italian authors generally agree with this opinion. It has been suggested, however, by Monti (*Bolletino della Societa medico-chirurgica di Pavia,* No. 4, 1916) that icterus may be a misleading symptom, as it may indicate the co-existence of catarrhal jaundice and the jaundice of paratyphoid infection. Hence some British writers believe that the term "icteric" is something of a misnomer, the two characteristic features being the hemorrhages and the spirochetosis. The distinction certainly has the merit of clearness.

Most authors accept the spirocheta described by the Japanese biologists Ita and Inada (*Journal of Tropical Medicine,* January, 1917) as the causal organism. The evidence is sufficiently strong, but some authors have failed to find it in their cases. Looking at this organism in its bearing on the different symptoms of the diseases, we may inquire how far other spirochetae may affect the question. Infective jaundice has several elements of uncertainty; in some cases the Spirocheta pallida has been found, and in still others a spirocheta isolated by Uhlenhuth and Fromme was the alleged cause. There seems in the present state of our knowledge no proof that there is a single organism at work. The appearance of the spirocheta of Ita and Inada is by no means invariable. It has been found in the kidneys of field rats, but not always (Nicolle and Blanc, Société de biologie, No. 9, 1917). Further researches seem to be necessary in this direction, as well as in the study of the specific immune bodies.

In saying this we are far from suggesting that Monti is right in his argument that infective jaundice is not an entity. The belief in a specific organism has amply justified itself by the facts of the case—the long period of incubation of three weeks, like syphilis, the sudden onset, the petechial hemorrhages, the lysis, and relative mildness of the disease. But it would be interesting to account for the cases of icterus gravis, acute yellow atrophy, and meningitis which have been noted as complications.

INCIPIENT AND ADVANCED TUBERCULOSIS.

It is no longer consonant with the advanced conception of the nature of pulmonary tuberculosis to differentiate incipient and advanced tuberculosis, nor to separate the disease off into stages for any purpose except in the most relative sense. This classification gives the patient a sense of security not warranted by the circumstances, or too gloomy a one, as the case may be. Neither in this disease nor, indeed, in any other is the line of demarcation between pathologic developments sharp enough for such determinations. In tuberculosis, particularly, is the time of the inception of the disease especially hard to discover, because so many recover from the infection before a diagnosis can be made. The discovery of the first palpable signs or symptoms of this disease may be long removed from the actual commencement of infection. Often the discovery of the pulmonary lesion is synchronous with the invasion of the general organism, that is, with the time when the ravages of the disease manifest themselves in disturbances of all the organs. To classify the progress of the disease in accordance with the amount of pulmonary involvement would be to ignore those cases with little or no physical signs because too deep in the tissues or not sufficiently circumscribed to manifest themselves to the senses, but where symptoms, and even sputum, may be positive. General miliary tuberculosis may have origin in a focus of infection not patent to the senses of an examiner. The size of an area of involvement is seldom an indication of the duration or of the severity of an infection. In susceptible individuals with little resisting power, any lesion denotes an advanced stage, no matter how recent the origin, if that could be determined. On the other hand, in resistant individuals, even a very large area may denote a very tractable condition, for the active part of the lesion may be a very small part of the whole, the rest being healed and scarred tissue. These large areas may have less systemic symptoms than very small but active lesions. Even in the matter of prognosis, a small lesion with systemic symptoms may be of graver import and actually more advanced than a very large lesion without symptoms. Within reasonable limits, the determination of the progress of the disease, as well as the outlook in pulmonary tuberculosis, is dependent largely upon the systemic symptoms rather than on physical signs. In all likelihood, subjects in whom the systemic manifestations are severe are the ones in whom the outlook is uncertain; and cases of so-called far-advanced tuberculosis that, nevertheless, come to cure are all the time really incipient in that healing and spread go on hand in hand, while at no time is the active disease area very profound, although much tissue had actually been involved. In fact, the disease is practically a local infection so far as the general organism is concerned. The organism can compensate for the destruction of a great deal of lung tissue without perceptible reduction of the air space.

The tendency to view tuberculosis with more gravity than heretofore, especially with respect to military service, has been enhanced by observation of the behavior of known tubercular cases in military life. There is little doubt that those cases of tuberculosis that were able to weather severe campaigns were cases in which the disease had practically always been local, no matter how large the area of involvement. In tuberculosis, if there is a line of demarcation between incipient and advanced involvement, the line hinges on the question of systemic participation in the disease. The terms "incipient" and "advanced," while in one sense unjustified, if they must be used, should be employed with these facts in mind, and as especially indicative of the effect of the disease upon the organism as a whole rather than upon the pulmonary tissues alone.

* * *

THE SERUM TREATMENT OF PNEUMONIA.

In discussing the reasons for the lack of marked success with the serum treatment of pneumonia, and perhaps even to a greater degree with the pneumococcus vaccine, it must be remembered that, while pneumonia is caused by the pneumococcus, there are many strains of this coccus which, although they are identical morphologically, are quite dissimilar in their behavior biologically. Any hope of success with serum or vaccine treatment must come from the employment of a serum from the actual type of the pneumococcus that causes the particular disease to be treated. Bacteriologists have succeeded in isolating four of the most numerous types, and they are designated as Types I, II, III, and IV. Types I and II are the most common. It is found in animal experimentation that serum produced with one type will not immunize against another type of pneumococcus, nor will immunity gained with one type protect against infection with another. This is, of course, true with the active treatment of pneumonia with the serum. For some reason, there has been even less success with vaccine prophylaxis and vaccine treatment in this disease, although some success has been reported with the prophylactic treatment. The prophylactic vaccine dosage is given of 600 million dead cocci at seven-day intervals for three injections, given under the skin. For the treatment of active cases, the introduction of so many bacteria into an organism already overcome with them rather lowers the resistance than increases it. In all likelihood, this can be explained on the ground that the negative phase induced immediately on the introduction of the killed cocci is too profound, and is not followed by the positive phase so necessary for successful vaccination therapy.

But any success gained through the serum treatment of pneumonia has been almost entirely with the use of sera produced from Type I organism, and because this type comprises the greatest number of infections, it is advised to use serum from this type where the exact type cannot be determined. The manufacture of other types of serum is being discontinued for stock use because of their slight application. The use of polyvalent immune horse serum made from the many types of the pneumococcus has proved to be almost valueless, because the benefits that arise with serum treatment seem to depend wholly upon the employment of the specific serum indicated in the particular case. Either the exact type of coccus must be determined in the laboratory, or a chance must be taken with Type I serum. Even though disease caused by other types of cocci is not benefited by Type I, it is perhaps advisable that all cases on admission be given Type I serum until the exact type is determined. It is not at all unlikely that most of the failures with the use of immune sera come from using serum made from a strain not causing the particular infection.

Moreover, with this lack of marked success with the use of serum must be remembered the usual dangers of serum treatments—that is, the danger of serious protein sensitization when so much foreign protein is introduced into the body. However, even this danger may be somewhat anticipated by the intradermal skin test for serum sensitiveness—serum sickness. The raising of a wheal on the site of the injection is an indication of this anaphylactic sensitiveness to the injection of foreign protein. The serum dosage is rather large. About 100 cc. are given intravenously every eight hours for three or four doses until there is a decided drop in temperature. At best, the serum treatment is applicable only to a limited number of cases,—where the exact type of organism causing the infection can be determined, and where there is no great anaphylactic objection to the introduction of foreign protein.

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DEFINITION OF INFECTIVE STAGE OF VENEREAL DISEASE.

Many requests are being received by the State Department of Health for an authoritative definition as to what is intended by the term "infective stage" of venereal disease, as used by this Department in the circular making these diseases reportable.

The term "no longer in an infective stage" is by no means a synonym of "cured." The syphilis patient who, for example, has had a few doses of arsphenamine may no longer be in an actively infectious state so far as the general public is concerned, yet he would be far from being cured. In order to give the practitioner something definite to go on, the following official interpretation of the term "infective stage" is offered for the purposes of reporting.

Syphilis—A patient suffering from syphilis shall be considered to be in an infective stage so long as he shows any symptom or lesion of primary or secondary syphilis, or any discharging lesion, of the tertiary stage.

Gonorrhea—A patient suffering from gonorrhea shall be considered to be in an infective stage until two negative laboratory tests have been obtained from specimens taken at least a week apart.

GRAVE OF A FAMOUS BRITISH SURGEON.

The *Lancet* has recently published the following photograph of the grave of Sir Victor Horsley at Amara, Mesopotamia, where the distinguished British surgeon died in service, July 16, 1916. The grave is in the British Cemetery, on the fringe of a palm grove, the mound, consisting of earth, baked and cracked by the sun. The picture was taken by a Sergeant of the Royal Army Medical Corps, attached to an Indian General Hospital.

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MEDICAL NOTES.

Smallpox in New York City.—During the year 1917, there were fourteen cases of smallpox in the City of New York, eleven of them contracted out of town. One came from the South, eight from the West, one from Connecticut and one from up-state. Of the remaining three cases, one was closely associated with one of the preceding. The other two were in mother and son; and in these no definite connection with an earlier case of smallpox could be discovered. Six of the fourteen patients were Negroes.

During the past two months (January and February) five cases of smallpox have occurred in the City of New York. Two of these contracted the disease outside of New York City, one in Bristol, Pa., the other probably in Newark, N. J. A third case was traced to infection by exposure to an earlier case. Four of the five cases were in Negroes.

While the total number of cases occurring in the city in the past few months is a little higher than usual, they need cause no uneasiness on the part of the public. Their occurrence calls attention to the fact that New York, as a center of industry, attracts large numbers of persons, some of whom bring infectious diseases into the city from distant points. These cases also show that the protection conferred by vaccination in childhood is of value for only a limited period. It should also be pointed out that a number of the smallpox cases which come in from outside sources or which develop in the city, travel about freely during the initial period of the disease, riding in public conveyances and otherwise coming in contact with large numbers of people.

Medical Aspects of the Tobacco Habit.—In a paper read before the Association of Health Officers of Nova Scotia, (published in The Quarterly Bulletin of the Department of Public Health of Nova Scotia. Halifax, N. S., January, 1918) D. Fraser Harris, Professor of Physiology in Dalhousie University, gives an excellent résumé of the medical aspects of the tobacco habit. We believe that the following conclusions, presented by Professor Harris, will be approved by many physicians.

1. The substances in tobacco smoke which are injurious are probably oxidation products of nicotine and other alkaloids.
2. The smoking of tobacco is the more injurious the younger the person, hence young recruits suffer more readily from "tobacco heart" than older men.
3. The chewing of tobacco is much more injurious than the smoking of it, and ought to be discouraged.
4. Since what is injurious in tobacco smoke is absorbed more readily by inhaling than by smoking without inhaling, inhaling ought to be discouraged.
5. There is a marked idiosyncrasy towards tobacco in respect of the substances which raise the blood-pressure, cause irregularity of the heart and give rise to gastric acidity.
6. Those who have this idiosyncrasy ought not to use tobacco at all.
7. Those who do not have this idiosyncrasy may use tobacco in moderation with impunity.

Typhus in Ireland.—The *Lancet* quotes from the annual report of the Local Government Board for Ireland, just issued, which states that the cases of typhus notified during the year ended March 31st, 1917, numbered 110, or practically the same as the previous year, when the number was 112.

"These figures, however, do not fully disclose the incidence of the disease, because, as the report adds, notification has not been universally adopted in Ireland, and, further, because the initial cases in outbreaks of typhus are liable to escape recognition. In urban districts the disease was prevalent in Belfast, where 46 cases were notified; unfortunately the source from which the infection was conveyed was not ascertained. Twelve cases were reported as having occurred in Dublin, where the outbreak was attributed to overcrowding and insanitary conditions. In rural districts the largest outbreak (25 cases) occurred in Oughterard rural district, and this was also attributed to the same factors as in Dublin. Smaller outbreaks occurred in Tuam, Killadysert, and Enniscorthy rural districts. The steps taken to prevent the spread of the disease seem, in general, to have been more effective than the administrative action in regard to the grossly insanitary conditions and domestic overcrowding which admittedly were associated with its appearance."

WAR NOTES.

Petrograd Decimated by Disease.—It is reported that the population of Petrograd is being decimated by an outbreak of disease. The epidemic is attributed to extreme shortage of food and to all kinds of insanitary conditions. Various forms of typhus, as well as smallpox, are prevalent.

Moreover, extremely unsanitary conditions now prevail in the city, while all the organizations concerned with public health have either been abolished or have virtually ceased operations, owing to the revolution. There is no sanitary commission, there are no medical specialists, and there is no registration of diseases. Very few doctors are in practice and some of these threaten to go to Germany if the ignorant Russian proletariat doing menial work in the hospitals are permitted to continue to dictate to medical officers and trained nurses.

Measles in Army Camps.—Measles epidemics are subsiding in both National Guard and National Army divisions, but pneumonia persists, according to the detailed health report for the week ending January 4, as made public by the Army Medical Corps. The tables show 109 deaths during the week in the National Guard, 80 due to pneumonia; and 167 in the National Army, 110 being due to pneumonia. The death totals for the previous week were 108 for the National Guard and 98 for the National Army.

DEATHS IN U. S. ARMY FOR WEEK OF MARCH 8.—Deaths among the troops in the United States regular army, National Guard and National Army, totalled 156 during the week ending March 8, an increase of 3 over the preceding week. Seventy-one of the deaths were from pneumonia.

The regular army had the highest total of deaths with 60, the National Army had 54, and the National Guard 42. The detailed report of the division of field sanitation, made public recently, says that the health of the troops continues satisfactory.

WAR RELIEF FUNDS.—On March 19, the totals of the principal New England War Relief Funds reached the following amounts:

Halifax Fund	$697,979.32
Belgian Fund	665,521.90
French Wounded Fund	330,379.85
Syrian-Armenian Fund	293,404.78
Italian Fund	152,668.40
French Orphanage Fund	152,598.86
British Imperial Fund	116,903.29
Lafayette Fund	34,594.28

AMERICAN TUBERCULOSIS REFUGE IN FRANCE.—Report from Paris on March 16, states that the American Red Cross in France has initiated a plan of caring for the repatriated French tuberculates who are returning daily to their homes from behind the German lines.

"A village community and a family colony for tubercular refugees will be created outside Paris on a site where a group of Quakers are clearing the land and constructing 150 three-room and five-room houses. Each house has a porch and can be taken apart and transported to the devastated regions when the war is over.

Dr. William C. White, head of the tuberculosis bureau of the Red Cross and originator of the plan, says the Red Cross has established tuberculosis hospitals for men and for women, but this involves separating husbands from wives and parents from children. This is the first experiment of a family colony for tuberculosis sufferers to be tried on a large scale.

The Department of the Seine has loaned 50 acres of meadow and woodland for the settlement and the Society of Friends has provided architects to lay out plans for the village and the houses. The French Government will pay more than half the cost of maintenance and the American Red Cross will expend a large sum."

AMERICAN WOMEN'S WAR HOSPITALS.—Report from New York on March 16 announces a plan of the War Service Committee of the Medical Women's National Association in behalf of the American Women's Hospitals to raise a large fund for the establishment and maintenance of hospital clinics in the Allied countries, to be staffed throughout by American women physicians, surgeons, and lay workers. The fund will be expended under the authority of the Red Cross. The raising of the fund will be in charge of Dr. Gertrude A. Walker, a trustee of the Women's Medical College of Penn., and of Dr. Rosalie Slaughter Morton, chairman of the American Women's Hospitals.

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending March 16, the number of deaths reported was 289, against 266 last year, with a rate of 19.21, against 15.19 last year. There were 49 deaths under one year of age, against 36 last year.

The number of cases of principal reportable diseases were: diphtheria, 68; scarlet fever, 24; measles, 255; whooping cough, 40; typhoid fever, 1; tuberculosis, 54.

Included in the above were the following cases of non-residents: diphtheria, 6; scarlet fever, 3; measles, 5; tuberculosis, 2.

Total deaths from these diseases were: diphtheria, 2; scarlet fever, 2; measles, 3; whooping cough, 2; tuberculosis, 15.

Included in the above were the following non-residents: diphtheria, 1; scarlet fever, 2; measles, 1; tuberculosis, 1.

Obituary.

JOHN GEORGE BLAKE, M.D.

DR. JOHN GEORGE BLAKE was born in the County of West Meath, Ireland, on August 8, 1837, and died at his residence in Beacon Street, Boston, March 4, 1918. He came to Boston on a sailing vessel with his mother and brother in 1849, and lived on Purchase Street, in the Fort Hill district. He attended school, and at odd times worked for a well-known druggist in that vicinity. Then and there began his wide knowledge of drugs, which was a characteristic in after years.

He entered the Harvard Medical School in 1858, and was fortunate in attracting the favorable notice of Drs. O. W. Holmes, J. Mason Warren, Henry J. Bigelow, and Edward H. Clarke. These gentlemen, appreciating the energy and struggles of the young man, requested him to attend the summer term at the school, free of charge.

On graduating from the Medical School in 1861 he received the appointment as house pupil at the Massachusetts General Hospital and served for a year under Drs. Warren, Bigelow, and doubtless other members of that famous staff. So long as he lived, Dr. Blake had a warm place in his heart for his *alma mater,* the Massachusetts General Hospital.

On leaving the hospital, he took an office on Harrison Avenue, a popular residential section of the South End, and was soon in active practice. Early in the Civil War, Dr. Blake was appointed recruiting officer, and when an emergency call came for surgeons, he joined the Boston unit, and saw service after the second battle at Bull Run.

From the early days of his professional life, Dr. Blake was interested in hospitals. He had more or less to do in the establishment of the Carney and St. Elizabeth's Hospitals and served upon the staffs. When the Boston City Hospital was opened in 1864, Dr. Blake, as one of the visiting physicians, made the first visit on the medical side with his house physician, Dr. Clarence J. Blake. His connection with the hospital continued without interruption until his death, nearly fifty-four years. He served as visiting physician until the formation of a Gynecological Department, when he was appointed senior physician for diseases of women, and, finally, senior physician, which position he held to the close of his life.

Dr. Blake was an accomplished clinician. He kept abreast of the times, was prompt and careful in his diagnosis, faithful in his supervision, cheerful and encouraging in his prognosis, a host in the sick-room. His visits were a ray of sunshine to his patients.

As a clinical teacher, Dr. Blake was deservedly popular; practical, resourceful, enterprising; ready to adopt new methods that promised to benefit his patients. He was especially interested in medical students. His own experience enabled him to appreciate their trials and their limitations, and he did much to help them, even after they had received their degree and started in practice. For many years it was his custom to employ recent graduates as assistants and, as a result, several physicians owe their favorable beginnings to his assistance.

Dr. Blake's private practice, both family and consulting, was extensive. His days and nights were fully occupied. His faculty for turning off work was remarkable. There were few idle moments. He once told the writer that, aside from his ordinary duties, he had attended five confinements in a single day. His capacity seemed to be limited only by the time in hand.

While carrying one of the largest practices in the city, he still found time for other activities. He served upon the Boston School Committee for sixteen years, much of the time as its chairman. He was also a water commissioner, director of the South End National Bank, and trustee of the Union Institution for Savings.

Dr. Blake was a member of the Massachusetts Medical Society, the Boston Society for Medical Improvement, and the Obstetrical Society. He was especially interested in the last-named society and was a constant attendant at its meetings for many years. Not a frequent writer for the medical journals, yet his papers were always interesting. He contributed papers to the History of the City Hospital, and also to various reports of that institution, issued from time to time. He was an independent Democrat in politics, and could be depended upon to support those measures which he thought would result in benefit to the people.

Dr. Blake's chief pastime was athletics, being especially fond of rowing. Many an hour was spent upon the Charles River with his sons and friends in that sport. He was also a constant attendant at the gymnasium of the Boston Athletic Club—a custom that undoubtedly conduced to his buoyant spirits his good health and long life.

In 1865 Dr. Blake married Miss Mary Elizabeth McGrath, who died eleven years ago. She was widely known as a writer for many years. He is survived by six of the eleven children: Miss Marie Blake, who has made a happy home for her father since her mother's death; the sons are Dr. John Bapst Blake, one of the surgeons-in-chief of the City Hospital; Dr. Gerald Blake, of the medical staff of the Massachusetts General Hospital; Arthur Blake, an ensign in the U. S. Navy; Robert Fulton Blake, of the Submarine Signal Company; and Frederick Blake.

Personally, Dr. Blake was cheerfulness personified. Genial, alert, enthusiastic, social in his instincts, he was naturally popular and had hosts of friends. He was fortunate in the possession of a peculiarly sunny temperament—a most desirable quality for any physician—that will always endear his memory to his many friends and patients. He served three generations of patients, an experience shared by few in any profession. He accomplished an enormous amount of good work, and won the respect and esteem of the community in which he passed his long life. His career is an encouraging example of achievement that is possible for those who have ambition, and the capacity and determination for continuous, faithful service in their chosen callings.

George W. Gay, M.D.

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Miscellany.

NOTICE.

Laboratory Course for War Service, American Women's Hospitals.—With the coöperation of the War Service Committee of the Medical Women's National Association, a second course in medical laboratory work is offered to applicants who have the preliminary training in science and scientific methods obtained in a four years' college course or its equivalent. The object is to fit workers for war service in medical laboratories in this country and in Europe, whether they take the place of men who have been called to the front, or go themselves as members of a unit which may be called for active service here or abroad.

Dr. William H. Park of the New York University and the City Health Department, Dr. Anna W. Williams of the Bureau of Laboratories of the New York City Board of Health, and Dr. Elise L'Esperance are in charge of the course, which will extend over a period of three months, requiring six hours' work each day. The training thus acquired should fit students to act not only as technicians, but as interpreters of the results obtained. The fee is $75.00.

The New York University and the Health Department have offered the use of their Laboratories, also Cornell Medical College.

Classes will be limited to about twenty (20). Work will begin at 9.30 a.m. on Monday, April 1, 1918, in the bacteriological department of the New York University, 1st Avenue and 26th Street.

Application may be made to Dr. Anna W. Williams, Research Laboratory, foot of East 16th St., New York City.

MICROBOLOGY.

I. General Microbology, including
  (1) The classification and general characteristics of pathogenic microörganisms (bacteria, molds, protozoa and microscopic worms).
  (2) General methods used in examining and cultivating microörganisms.
  (3) The relation of microörganisms to disease.
II. Specific Microbology, including
  (1) A study of all the more important pathogenic microbes, with special reference to microscopic diagnostic methods of these and of the infectious diseases in which no specific microbe has yet been found.
III. Microbology in Hygiene and Therapy, including
  (1) The examination of water, milk, air, soil, foods.
  (2) The use of disinfection.
  (3) The preparation and uses of serums and vaccines.

CLINICAL PATHOLOGY.

I. Chemistry and Microscopy—of the blood, gastric contents, feces, urine, spinal fluid, in health.
II. Chemistry and Microscopy—of the blood, gastric contents, feces, urine, spinal fluid and all exudates in disease.

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RECENT DEATHS.

Edward Page, M.D., formerly treasurer of the Massachusetts Dental Society for twenty-five years, and the last surviving member of the first dental class to graduate from Harvard University, died recently at the Home for Aged Men. Born in Groton, Dec. 4, 1826, the son of Abel and Asenath Page, he received his early education in the common schools of that town. He was graduated from the Harvard Medical and Dental Schools, was one of the organizers and first president of the Harvard Dental Alumni Association, and treasurer from 1874 to 1880. He became a member of the Massachusetts Dental Society in 1869, and served as its treasurer until 1897, when he was transferred to the honorary roll of that organization. He was also a member of the New England Dental Society and the Dental Protective Association of the United States.

Ransford Delos Canedy, M.D., one of the best-known practising physicians in northern Berkshire, died at his home in North Adams, March 10, 1918, of pneumonia. Dr. Canedy was 45 years old, and had spent his entire life in North Adams. He was a graduate of Drury School and of the College of Physicians and Surgeons at Columbia in 1896. Before beginning the practice of medicine he enjoyed considerable fame as a violinist of extraordinary attainments, and was frequently heard in concerts in North Adams. His rise in the medical profession was rapid, and he served several times as a member of the board of health, part of the time as chairman. Last fall he was appointed by Governor McCall as a member of the Exemption Board for District 1, the headquarters of which is North Adams. He also acted as examiner of the drafted men, and had spent most of his time on draft work for the past few months. He was a brother-in-law of the late W. Caldwell Plunkett of Adams, who died only a few weeks ago. He was, perhaps, one of the most popular physicians in this city and was possessed of a very attractive personality. He is survived by a widow and one daughter.

Charles H. Gerrish, D.M.D., for half a century a leading dentist of Exeter, N.H., died recently at the Carney Hospital, South Boston, at the age of 73 years. Dr. Gerrish was a foster son of the late Mr. and Mrs. Ira Burnham, who were long in charge of the academy dormitory, Abbott Hall, at Phillips Exeter. This was his boyhood home. Dr. Gerrish was captain of the team from the Exeter Gun Club, which won the first international clay pigeon tournament, held in Chicago in 1884. He leaves a wife and one daughter.

Jose L. Hirsh, M.D., a noted specialist in children's diseases, died last week in Baltimore, of heart disease. Dr. Hirsh was born in Philadelphia in 1871.

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DEDICATION OF THE CHEEVER AMPHITHEATRE.

On March 21 the Surgical Amphitheatre of the Boston City Hospital was dedicated to the memory of Dr. David Williams Cheever, with a simple but impressive ceremony. The Alumni were represented by Dr. George W. Gay, Senior Surgeon of the Hospital, who presided over the occasion. The Trustees were represented by Mr. Thomas A. Forsyth, who received the bronze tablet which was presented to the Hospital by Dr. David Cheever, on behalf of the family of Dr. Cheever.

The exercises took place in the Cheever Amphitheatre at 12.30 p.m. Many distinguished Alumni were present. The absence of many of the younger men was noted, and, of course, was explained by their absence in the service.

The speakers were as follows:

Dr. George W. Gay, Senior Surgeon, Boston City Hospital.

Ladies and gentlemen:

Through the generosity of Dr. Cheever's family we are given the pleasure and privilege, on this occasion of dedicating an interesting memorial to the memory of the surgical father of the Boston City Hospital, Dr. David Williams Cheever.

It is peculiarly gratifying that the presentation is to be made by the son of our old friend and colleague, who is a graduate of this Hospital and worthy in every way of his distinguished parent. I have the pleasure of introducing Dr. David Cheever.

Dr. David Cheever.

Mr. Forsyth, Dr. Gay, members of the Boston City Hospital Alumni Association, and invited guests:

When this Hospital was founded in 1864, it gave to the man whom we are gathered here to honor, an opportunity which he considered one of the greatest of his life. Young, well trained in his profession, but lacking the occasion, he found here a fertile field for the exercise of his powers. Appointed to be full surgeon of a great hospital at the age of thirty-three! The favor was great, and it was characteristic of Dr. Cheever that the return that he made was not niggardly. From that day he freely gave the best hours of the best days and years of his life to its service. Such devotion is not rare among physicians; it is the proud privilege of their profession.

Among the interests which composed his life, his home stood first; next came his chosen calling, and among the elements which composed that calling were, perhaps, three chief ones,—his patients and colleagues, his teaching in the Harvard Medical School, and his service in this institution. He made of his patients the intimate and devoted friends who grow so surely in the sunlight of a sympathetic and unselfish nature. He was proud to acknowledge the debt of his forebears and himself to the training and ideals of Harvard, and he repaid his Alma Mater, in part at least, by thirty-three years of teaching of her sons. But not least among his interests was this Hospital. No one contributed more, perhaps few so much, to its growth and reputation. After the first thirty years of active service came twenty years of wise direction and counsel, diminishing only as the years brought infirmity to the body and senses, but not to mind. He never ceased zealously to guard its reputation, to honor and cherish it, to defend it from the inevitable intrigues which sometimes beset the best-governed institutions.

When the final accounting of a true physician's life is made, and, on the one hand, are set the anxieties, the toil, the disappointments, the bitter failures, the agony of self-reproach at fancied or real mistakes, and, on the other side, are set the supreme satisfactions of human suffering alleviated, of useful lives prolonged, and of premature death held at bay, who can doubt on which side of the ledger the balance rests!

None can know better than the children of Dr. Cheever how overwhelmingly the spiritual rewards and inspirations of his professional life outweighed the dissatisfaction and evils attendant thereon, and to what great degree these satisfactions were drawn from his life and work at the City Hospital. Therefore we rejoiced at the determination of the Trustees to give his name, for all time, to this operating theatre; and we are proud also of the privilege of giving to you, Sir, representing the governing board of the Hospital, this splendid portrait, from the inspired hands of Bela Pratt. We who, either as colleagues, or friends, or patients, or members of his family, have known this man in life, have the fullest confidence that this enduring bronze, the last work, alas, of a master-sculptor, will serve to perpetuate the traditions of a noble life, in the institution to which it was so unselfishly devoted.

Dr. George W. Gay.

It is a matter of sincere regret that the honored President of the Board of Trustees is not able, by reason of his health, to be present to accept this welcome gift to the Hospital. His long service in the Hospital, his deep interest in it, and his regard for Dr. Cheever make it particularly fitting that Mr. Shuman should have been here to receive this gift. But he has delegated that duty to one whose name is known everywhere in this country because of the gift in memory of one of the members of his family, of the Forsyth Dental Infirmary—one of the great institutions of this country, and one that will elicit the gratitude of the people for all time.

I have the honor of introducing Mr. Thomas A. Forsyth.

Mr. Thomas A. Forsyth, Trustee of Boston City Hospital.

My friends:

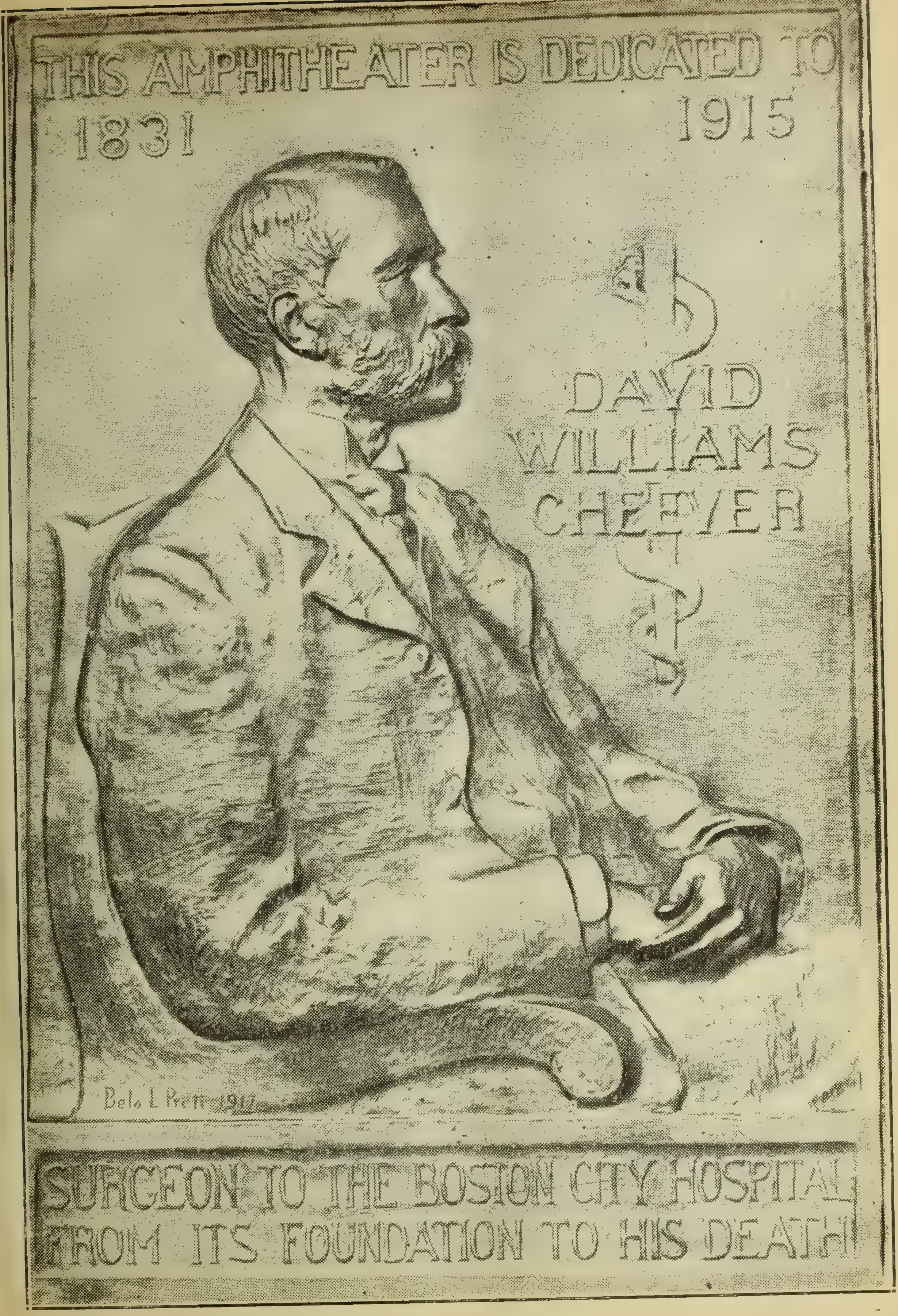
On behalf of the Trustees it gives me exceeding pleasure to accept this splendid, striking likeness of the late Dr. David Williams Cheever. It is especially fitting that it should be placed on the walls of this amphitheatre; that it be dedicated to him because of his excellent service to poor and suffering humanity in this Hospital.

Today, as you entered, you saw flying over the entrance a service flag, whose two rows of stars signify that almost two hundred of our Hospital family have gone forth to battle for democracy. To every one of them, and to those of us remaining at home, Dr. Cheever's memory will always be an inspiration. To his family this Hospital will ever owe a debt of gratitude for their generosity in presenting this beautiful memorial which will always be a great incentive for future generations of young men here graduating.

And, my friends, I am honored to be chosen today to make this address of acceptance on behalf of the Trustees. I thank you.

Dr. George W. Gay, Senior Surgeon, Boston City Hospital.

David Williams Cheever, one of America's greatest surgeons, was a leader in the med-


THIS AMPHITHEATER IS DEDICATED TO
1831
1915
DAVID
WILLIAMS
CHEEVER
Bela L Pratt 1917
SURGEON TO THE BOSTON CITY HOSPITAL
FROM ITS FOUNDATION TO HIS DEATH

ical profession for many years. Loyal to its highest standards, representing its noblest ideals, he was a model for his chosen profession. "Difficulty, struggle, progress"—this was his motto and his daily life was consistent therewith.

Dr. Cheever served this Hospital faithfully and efficiently for more than half a century. The youngest member of the Surgical Staff, he became its sole survivor. He brought renown to the institution, was influential in its development, and lived to see it occupy a foremost position among municipal institutions. He established the first surgical clinics in this Hospital and carried them on throughout his active professional life. He gave instruction to thirty-three classes of students. As a teacher, he had few equals and no superiors. As a writer he was terse, simple and convincing. A clear thinker, a sound reasoner, and an impressive speaker, he always commanded the attention of his audience. As an author, an editor, an operator, a practitioner, he was eminently accomplished.

Dr. Cheever's sterling character, his high ideals, his strict integrity, his sound judgment, his loyalty to this Hospital and to the profession, are hereby commemorated for all time by this beautiful and appropriate memorial tablet. Through the courtesy of the Trustees it is to be placed in this amphitheatre, which is to bear his name, and in which so much of his valuable work was accomplished.

With the highest appreciation of his many noble attributes, we here and now dedicate this tablet to the memory of David Williams Cheever, as a token of our love and esteem for him and his work, and as an example and an incentive to future generations of students and physicians who will receive instruction in this institution.

◆

PUBLIC HEALTH BENEFITED BY THE WAR.

At a meeting at Wesleyan Hall, Dr. R. Kendrick Smith of the lecture bureau of the Massachusetts Committee of Public Safety, declared that the war indirectly reacted for the better on the public health.

"The saving of food and fuel saves in the conservation of the health and strength of the people," he said. "City folks actually suffer from disease and disability caused by overeating and breathing overheated air. A prolonged war necessitates conservation of health, strength, and efficiency of the civilian population. The youths must be made into powerful men as quickly as possible. The women must be trained to keep themselves, their children, and their men folks healthy, so that industry for the growing and manufacture of food and the preparation of munitions may go forward at top-notch speed.

Idleness, apathy, laziness, and indifference must be done away with entirely. If we pause every time we waste anything and realize that the act really shortens life in Europe, most of us will refrain from thus aiding murder, in even so remote a manner."

◆

Original Articles.

THE SERUM-CONSERVED DRESSING FOR INDUSTRIAL WOUNDS.

By Fred R. Williams, M.D., Worcester, Mass.

Sir Almroth Wright's dictum early in the present war, of no antiseptics,—that iso- or hypertonic saline dressings would be sufficient to combat infection,—would have been satisfactory perhaps if he had been dealing with civilly produced instead of wounds made by the implements of war, where the worst possible death-producing organisms are ever-present. The subject matter of this paper is based upon a close personal study of war wounds as seen in the present conflict and upon observations made at the Norton Company's hospital, of wounds as seen in civil life. Wright believed that a patient's serum would take care of his wounds and infections, and repair them more rapidly than any other agent. Leary has recently shown in this Journal that if the autogenous serum is not produced in sufficient quantity, that sera from other sources may be used to advantage. On all except punctured wounds and those where primary union is expected, I believe that the one best dressing is that which will conserve the patient's serum. This dressing should be non-absorbent and non irritating. Wax is the agent at the present time most commonly used. Its application has not been extended into as large a field as its capabilities assure. It heals readily, not because of any special properties it possesses except that it is non-irritating and non-absorbing. In those wounds of considerable loss of tissue, skin denudations, burns, frostbite, this dressing is ideal. We have found that lacerated wounds heal more rapidly and with less trouble when treated as follows: When the wound is first seen the surrounding uninjured skin is cleaned with gasolene, and painted with tincture iodine full strength. No iodine is allowed to come in contact with the wounded surface. Wax is immediately applied. These wounds are dressed daily for the first few days, especially if there is much tissue destruction, but at these re-dressings the wound proper is not touched, consequently the so-called cleansing of its surface is omitted. An electric blower is applied as a drier, which has the advantage also of preventing the skin from becoming too blanched or parboiled. The term "pus-poultice," which I have seen applied to this form of treatment, has not been experienced by us. In the practical application of treating the industrially wounded, it may be better or perhaps necessary to see their wounds at least once daily, but the point I wish to impress is, that at these sittings the painting with iodine, and cleansing the wound with gauze or some other irritant, are not conducive to rapid repair. Wounds have done better under iodine than under the older methods because there has been less interference and contamination. We are taught that in preparing the skin for an operation, that its surface must be dry and must have been kept dry for some time prior to the application of iodine. Otherwise, it is non-penetrating. This same line of reasoning should hold in a recent wound covered with blood and serum. Practically we have gotten into no trouble by its omittance. Adhesive plaster, as it is commercially known, is an excellent serum retainer. It is somewhat more absorbent than wax, and altogether its application is far more limited. Burns will heal as rapidly under adhesive as under wax, but it is less easily applied and more expensive.

CONCLUSIONS.

1. From a fair trial of unselected cases, that the serum-retained dressing is a rapid healer.
2. Wound secretion is salutary and should be conserved.
3. The most common error by nurses and others is the daily attempt to clean the wound by sponging.
4. With the serum-retained dressing, re-dressings are painless, hence without trauma. This is again conducive to rapid repair.
5. In wounds treated as above outlined, excessive granulations are never seen. Sluggish wounds are also absent.

HEALTH IN WAR INDUSTRIES.

BY THOMAS F. HARRINGTON, M.D., BOSTON,

Medical Deputy Commissioner of Labor, Massachusetts.

MASSACHUSETTS, in common with many other states, is face to face today with many of those problems of industrial health and of workers' welfare that have been the cause of so much anxiety in Europe since the beginning of the war. The lesson taught by the experience abroad is that the country's man-power must be zealously conserved and safeguarded in the industrial field as in the military forces. It is equally true that each country abroad has learned that the greatest strain of the burden produced by the exigencies of the war, centers directly upon the war industries, and especially on the munition industries. Notwithstanding the heavy toll paid by European countries for their failure to recognize earlier these self-evident truths, the fact is more evident each day that the industries of this country, in many branches of war work, are operating along the same lines that brought so much confusion, discontent and failure in the labor world of Europe. The object of this article is to point out some of the fundamental causes of ill health and lessened output among industrial workers on war orders in England and France during the early years of the war, and to set forth the preventive measures found effective in combating this source of national wastage.

In Massachusetts the labor laws are guarded zealously by the State Board of Labor and Industries. The legislature created, in 1917, a special War Emergency Commission to supervise war industries requesting a modification of existing laws in order to meet the emergency. This Commission is composed of the Commissioner of Labor, two manufacturers and two representatives of labor (one woman). The requests already presented to this special commission indicate that there are many situations arising that call for special provisions in order that neither the nation's needs nor the health of the workers will be sacrificed.

WARNING.

As a foreword I would call attention to the danger of nervous and physical shipwreck confronting so many of the leaders of American genius in public life, in finance and in science. Already many of these willing volunteers are beyond that margin of safety arbitrarily set by nature herself and are well within the danger zone in which her warning signals of impending disaster have become blurred by a deadened, overworked nervous system. The brain cannot adjust itself, without considerable effort, to the mass of detail work associated with the organization and administration by government departments to meet the demands of war-time activities. When such an adjustment is attempted by persons who had long since assigned such detail work in private business to subordinates or assistants, breakdown is inevitable. Official red-tapism and divided responsibility aggravate greatly the nervous tension. A reorganization of the working programme of our country's leaders, now on the nation's firing line in public life, is one of the most pressing problems of the day.

Nor is this danger any less in the great industries themselves. Already chief executives and responsible heads of departments are showing the effects of the nervous and physical strain of the high speeding, the long working days, the uninterrupted days of labor, the loss of sleep and the neglect of adequate rest and relaxation under which these pivotal men are laboring. In many establishments, the successful operation of these departments depends upon the direction and supervision of these men and women. They cannot be replaced readily. Their sacrifice is more than that of the individual,—great as that is,—it may result in a disaster involving an output of material most essential in the nation's crisis. The protection of this selective group of workers should be kept in mind in preventive measures created for the protection of the workers in the various war industries.

THE PROBLEM.

The health problem of the war industries is far-reaching in its effect. It may vary from simple headache, due to eye-strain, or it may involve the consideration of the causes or origin of serious organic disease with fatal results. It should not be overlooked that conditions in occupational life, capable of disabling some workers, invariably mark, to some degree, all who are fellow workers to this group. It is not practicable to give, in an article of this length, anything like a complete description of the factors and their effects involved in the problem of occupational hygiene associated with the war industries. The following general headings, however, may serve to indicate the lines along which prevention should aim.

FATIGUE.

Fatigue is more responsible than any other one cause, for the sickness, accidents, diminished efficiency, broken time and lessened output of individual workers of all classes.

The Munitions Committee of England has made some very definite and illumining deductions from its study of this problem. These findings may be summarized as follows: Fatigue is the sum of the results of activity which show themselves in a diminished capacity for doing work. It is not to be measured by the familiar tests of bodily sensations; on the contrary, such bodily sensations are misleading and false as a guide to the presence or the degree of fatigue. Fatigue must be considered as a progressively advancing clogging of the wheels in the human mechanism by dirt, which results in a diminished capacity for performing the act that caused it. It is not to be compared with a steam engine lacking fuel. In other words, it is the accumulation, within the living elements, of the products of the chemical changes involved, and the using up of the substance supplying the chemical energy. The trouble lies in the nervous system, not in the muscular system. The muscular symptoms—"aching," "tired out," "winded," etc.—are but the referred sensations of a poisoned nervous system. The practical lesson from this fact is that as ability to perform work depends upon the functioning of the brain and nervous system primarily, any reduction in the quantity or quality of work being performed is a true index of the condition of the nervous system. Scientific industrial management that does not recognize that problem as chiefly one of fatigue of human beings with a sensitive nervous system, rather than one of machinery control, is destined to failure. The real problem in scientific industrial management is the recognition of the point in a person's working capacity at which working capacity begins to fail, and so to arrange periods of rest in relation to hours and days of work that the nervous system may have an opportunity to rid itself of the accumulated poisons. If this is not done, the accumulation of the products of wear within the body results in injury not so readily repaired by the next period of rest, and permanent fatigue soon results.

Fatigue may arise from the maintained use of intelligence and observation, either directed steadily on one skilled task, or distributed over many tasks, *e.g.*, several machines, or it may result from the continued use of special senses and sense-organs. Work done in the natural rhythm of the worker is far less injurious in its fatigue effect than that done in unnatural rhythm imposed upon workers by the pace of the machine or by that of fellow workers. Also, monotonous work that tends to become automatic, if repeated for some time, reaches over into the psychological field, and fatigue results. Conversely, interest, stimulation (piece work), or enthusiasm may decrease fatigue even on uniform monotonous work. In other words, the signs and symptoms of fatigue will depend on whether the work requires a fixed, routine, muscular effort or whether it involves mental activity of a simple or a more complicated kind.

The true signs, as well as the real test, of fatigue are diminished capacity that impairs the quantity or the quality of the output. In estimating this test, every precaution must be exercised so that the elements of interest, stimulation, etc., outlined above, do not influence the findings. Any "planned tests" may act to defeat the purpose.

The lesson to be learned from this study of the problem of fatigue among workers is that disregard of this problem in the early days of the war has led to a reduced state of efficiency, of lowered health and of diminished output that today is collecting a heavy toll from those nations, both in the ill health of the working classes and in the damaged products of such labor. This country has already gone far in the same dangerous course, nevertheless, signs are not wanting that the Government, as well as manufacturers, recognize this great danger, and a readjustment, with an establishment of fixed standards, is taking place here and there, based upon a recognition of the physiological law of work and rest that guarantees to the individual, as well as to the nation, a constant maximum labor output capable of being maintained for a long period without sacrificing the health, happiness and contentment of the country's laboring people.

Accepting as an established fact the conclusions of the English Commission, namely, that output is a true index of fatigue, the following observations show that fatigue progresses markedly (*i.e.*, diminished output) when the working period is carried beyond certain limits.

The problem of fatigue is influenced by many factors, *i.e.*, sex, age, position while at work, ventilation, light, temperature, etc.; nevertheless, the great factor underlying this problem is that of hours of labor, especially nights and holidays.

HOURS OF LABOR.

This factor is influenced somewhat by that of sex and kind of work, nevertheless, certain results obtained are so uniform that they may be accepted as standards for similar conditions in the industrial field in this country. The standards set in England at the end of the first year of the war have been revised, in the light of two years' experience and the strain involved by three years of war conditions, and, especially because of the rapid increase in the number of women workers entering the various industrial fields.

It has been shown conclusively, that the length of the working period is not synonymous with an increase of output; on the contrary, a reduction in the weekly hours of actual work, varying from seven to twenty hours, produced an increased hourly output of from 17 to 58%, and an increase of the relative total output of 22%. Women working on moderately heavy lathe work, whose output was 100 units when working 75 hours a week, increased their output 34% when the hours were reduced to 60 per week, and 58% when the period was reduced to a 50-hour week. In the process of milling a screw thread, in which there is no opportunity for the worker to speed up, as the process is practically one machine operation, the output increased by a reduction of the hours of work from 70 to 50 hours per week. Men engaged on heavy munition work increased their hourly output from 100 on a 60-hour week to 139 on a 50-hour week basis. Boys performing a purely automatic piece of work, and one that cannot be increased except by continuous application to their machines, increased their output from 100 on a 75-hour week to 129% when working on a 58-hour week.

Since, then, there is an actual increase of output accomplished by a reduction of hours of work, the problem has its economic side (reduced running expense) for the manufacturer, as well as the health benefits accruing from the longer period of rest in which to recover from the fatigue effects and for the enjoyment of adequate sleep and recreation.

In this country, women are entering rapidly the various industries set forth in the above study. Here, however, there is no such lowered national vitality as that now existing in Europe after its three years of war strain. Consequently the present time is most opportune to emphasize the fact that the employment of women for periods now fixed by law in Massachusetts and many other states, guarantees a greater output than can be expected by an extension of the hours of labor. Any letting down of these laws, except for short periods of emergency work, cannot be justified either on the basis of economy plant operation, or on the basis of health and efficiency of the workers.

SHIFTS.

The same physiological law that governs the weekly hours of employment applies to daily hours of work. A single shift of 14 or 15 hours is unprofitable, as it entails long periods of idle machinery as well as fatigue of the workers. A two-shift plan of equal length that allows an intervening period of rest for machinery and workers is far more economical in the long run, than a continuous 24-hour period of two shifts without this break. For women, the three-shift period is almost a necessity because of the many physiological problems peculiar to that sex. The difficulty of arrangement of transportation, meal hours, welfare supervision (especially on the night shift), have all been overcome satisfactorily in many establishments, here and abroad. It has been shown that women and young persons cannot work profitably for more than 5 hours continuously, even on the one-shift plan of ten hours a day (54 hours a week). A break in addition to the regular noon hour promises greater recovery from fatigue (greater output) because of the interruption of the monotony of the long work period.

It is now so generally agreed that continuous seven days' employment is neither profitable, healthful, nor economical, that very few establishments try to carry out such a plan regularly. Time gained on Sunday is largely lost by broken time and sickness on other days in the week, or, as one foreman puts it, "Sunday work gives 6 days' output for 7 days' work on 8 days' pay." In a group of men working on sizing fuse bodies in a munitions plant, the output was increased 16% above its previous level on the discontinuance of Sunday work. All authorities agree that the employment of women and young people on Sunday, without one day's rest in seven being provided, results in a breakdown sooner or later, often when the demand for greater output is most imperative.

Tests carried out in a munitions factory showed that workers engaged in heavy work, when *required* to rest 15 minutes in every hour, gave a greater output than when they worked continuously. This test was carried out on piece work, and the workers convinced themselves of the advantage of these rest periods. In another factory where the work was especially monotonous, a break of 15 minutes at 11 a.m. daily increased the output materially.

NIGHT WORK.

The night employment of women and minors in industries has been illegal in many states of this country for so many years that any attempt to break down such restrictions suggests either dire necessity or retrogression. Neither seems imminent at this time. There are, however, great possibilities that the time may come, if the war is continued very long, when women workers will have to undertake night work in order to meet temporary exigencies of the war. Night work by men has never been considered economical nor satisfactory. The difficulties in the matter of supervision at night, and the upsetting of social customs during the day, have their coevils in the lack of opportunities to secure the benefits of sunlight as well as the opportunities for recreation, amusement and education.

Experience has shown that women and young people bear night work badly. Their night output is materially inferior in quality and quantity to that of day work.

Much controversy has ensued relative to whether a continuous night work shift is more advantageous than an alternate day and night shift. On purely physiological grounds, *infrequent* changes are to be preferred. Exceptions are, however, found where social conditions favor a change weekly from night to day work. This system has great danger to the workers themselves, as they frequently sacrifice the daytime that should be allotted to sleep and rest, and devote it to household duties, social activities, recreation, etc.

Any night employment of women and young persons calls for the strictest system of welfare supervision. The type of supervisor for this work is far more important than that for similar work in the same establishment during the day. The night problem is very frequently one of morals. Night shifts for women workers should be so arranged, with a view of the transportation facilities of the locality, that women and young people are not compelled to be *en route* at unsuitable hours of night or early mornings.

Persons engaged in night work require food that is light and easily digestible, well cooked and appetizing, because the organs of digestion at night lack energy. The furnishing of warm food during the night work is practically a necessity in order to stimulate the flagging energy, especially that associated with early morning hours, viz., from 2 to 4 a.m. It has been demonstrated that the serving of a luncheon at 4 a.m. resulted in an increase of the output of the department where these workers were employed. It has also been shown that a break of two rest periods during the night, *i.e.*, one of an hour and one for one-half hour or of two three-quarters of an hour rests for luncheon, diminishes fatigue and broken time greatly.

A study of the best employment of women, based upon the overtime system, *i.e.*, one shift of 13 or 14 hours, the two-shift plan, *i.e.*, 12 hours each, and the three-shift arrangement of eight hours to a shift, showed that the 8-hour shift yields the best results. The strain of night work is diminished, greater vigor of work is maintained throughout the shift, less time is lost by illness, and accidents are reduced greatly. In all overtime work there is a marked flagging of energy during the last hours of the working period. This is very noticeable in the diminished output at the end of a 12-hour night shift.

WOMEN WORKERS.

While the foregoing applies with special emphasis to women workers, nevertheless, the possibility of a large number of them entering the industrial life from domestic and other spheres of life less strenuous than factory life, makes especial consideration of the physical condition of women workers necessary. There is no disparagement in the statement that women are physiologically different from men so far as the ability to withstand the fatigue consequent upon continued work such as that involved in the war industries. This difference is emphasized greatly when a woman passes suddenly from a sedentary or domestic life to one where great muscular effort is required, and where a long period of work—standing position often—and keeping pace with rapid machine movement, are involved. Much of the resulting disability can be checked, however, in its incipiency, if women workers could be induced to seek medical advice early, either provided at the factory or at a private clinic. A tactful, well-trained, industrial nurse or welfare woman, working with the women in the establishment, could bring about a greater attention to the minor ailments of women workers that would result in advice and in preventive measures, now usually neglected until serious illness results. In this connection, it seems necessary to emphasize that in the employment of women at occupations involving the handling and lifting of heavy parts, facilities should be provided for the use of overhead cranes, inclined planes, benches of suitable height, as well as for the use of boxes with casters, trolleys or other receptacles that reduce lifting and the carrying of heavy material to a minimum. The sudden, violent, or physically unsuitable movements in the operation of machines, should, so far as is practicable, be avoided. Seats should be provided for temporary rest and for such work that can be performed properly in a sitting position.

MINORS.

The employment of minors in war industries is bound to increase under the stress of drawing so many men from our industries. It is especially important that at a time when war is destroying so much of the man-power of nations, every effort should be made to guard not only against immediate breakdown of its youths, but more especially against the imposition of strain that may stunt the growth and impair a proper development of the rising generation. The physiological law that boys and girls need a reserve of energy not only for the maintenance of health, but for their growth, cannot be violated for any length of time without a penalty. Even under normal conditions, there is considerable danger of juvenile employment adversely affecting physique; this danger is materially increased by the present condition of employment. In the conservation of the health of youths, it is essential to recall that growing boys and girls require comparatively more food than adults because it is necessary to store up energy required for growth and at the same time to make good the daily loss of energy. In this connection, it is interesting to recall that tall, lean boys and girls require more food than short, fat persons of equal weight. Also, that natural foods yield the essentials required to replace the energy expended, and for the repair and growth of the body. The cheaper foods, such as bread, margarine, porridge, milk, herrings, cheese, beans, onions, cabbage, oranges and cheaper cuts of beef, provide all the requisite nourishment, and probably better health than is derived from more highly flavored and expensive foods which only artificially stimulate the appetite.

The great question today in the health problem involved in war industries, is not wholly whether the workers are standing, without evident injury, the strain of overtime, long shifts, Sunday or night work employment, but whether they can stand it for a long period; and, secondly, whether the toll to be collected later in the ill health, lack of efficiency, and in the development of permanent organic disease, can, in any measure, be compensated by the temporary increase in income and wages for any overtime employment. Physiology has very definite and positive findings on all these matters. Any other basis of meeting the issue is shifting and unstable.

SOME RELATIONS OF EXERCISE TO NUTRITION.*

By George Van Ness Dearborn, M.D.,
Cambridge, Mass.,

Instructor in Psychology and Education, Sargent Normal School, Cambridge; Psychologist and Physiologist to the Forsyth Dental Infirmary for Children, Boston; etc.

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In discussing the relations of bodily exercise to nutrition we are on the foundation-stones of the physiology of exercise, for this phase of the physical life, of course, underlies and conditions all the rest. Our bodies are primarily physiochemic, self-repairing machines, and require continual renewal as well as a continual supply of energy-liberating materials. On many phases of nutrition the general public needs precise and authoritative information, and for practical purposes the motto of this more or less unconscious demand is economy—economy of several things of prime importance and value to the average individual. It will be one of the purposes of this paper to show that exercise is the natural regulator of the nutritive functions, and how this control is exerted in the interests of economy and efficiency. The medical practitioner may care to have things "recalled" to him.

The most important phase of the subject is that wherein we have to deal with the effects of "*too little exercise.*"

We may sum up the whole effect of too little exercise upon nutrition in one short word, "atony"—a lack of tone, of vigor, of activity; a condition just the opposite from that of tonicity, where there is a normal condition of tone or functional tension.

We will consider the effects of too little exercise on nutrition under six heads:

The first thing to notice is that *the vigor of the muscles of digestion is lessened,* this being really a sympathetic effect with the skeletal or voluntary muscles. The muscular vigor of the digestive musculature is too small, and this condition, known as an atonic condition of the digestive apparatus, is the most serious in the muscles of the alimentary canal. There are two fundamental things going on in the alimentary canal in the process of nutrition. One is an elaborate set of chemical reactions comprised under the technical term of "hydrolysis" (simplification due to the enzymic absorption of water), and another set of more mechanical changes due to muscular movements. It is almost impossible to think of food passing down about thirty feet of distorted and convoluted alimentary canal without muscular movements to move it along its course. A most serious condition is paralysis in the intestines. There are longitudinal and circular muscle fibers in the intestine, and we already know of their indispensable importance. Anything which, owing to the principle of sympathy, lowers the tone of the skeletal muscles will also lower the tone of the smooth muscles of the viscera. However much food a man can digest and eat, if he is lying in bed and his skeletal muscles are in consequence weak and flaccid, his digestive processes will also be weak, because his smooth muscles will also take part in the general condition of atony. Thus, the condition of the skeletal muscles is of much nutritional importance. We know that when we invigorate a voluntary muscle by voluntary exercise, we also invigorate the smooth muscle and increase its tone and vigor, especially in the viscera and in the arteries.

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* Advance material from a forthcoming work, "The Physiology of Exercise."

Recently we have learned from the researches of various people, including those by Caroline McGill, how very closely allied are the cross-striated and the smooth muscles. In fact, the change from a smooth muscle to a cross-striated muscle takes place very easily in certain animals. Conversely in a way, anything which tends to decrease the tonus of the skeletal or voluntary muscles also affects the smooth musculature, and this effect can be seen in the smooth muscle fibers of the intestines. Here is a sympathetic degenerating atony of the muscle fibers of the intestines from a lack of all-round general exercise. You see a typical illustration of this condition in the case of convalescence from an exhausting disease. The person has lain abed for weeks, perhaps months, and has been prevented from taking any exercise. The vigor of his digestive process at the end of that period is very weak, even if he is eating very little food. In some severe thoracic diseases, it is true, the person afflicted is apt to eat even twice as much as under ordinary healthy conditions, and the food, notwithstanding, may be digested. But his digestive apparatus may be very weak purely from sympathy with the decreased vigor of the voluntary muscles, for the smooth muscles have developed sympathetically with the skeletal muscles.

Here we may be pardoned, perhaps, if we repeat from the author's "Certain Further Factors in the Physiology of Euphoria"* a page devoted to the motor action of the villi in nutrition:—

Passing now to the mechanism and process of intestinal absorption we see in the neuro-musculo-glandular mechanism of the villi and the valvulæ conniventes a much more competent and actively adaptable apparatus than has been disclosed heretofore. In general terms the presence of muscle means the active adaptation of an organ to conditions outside itself, for example, in the absorptive organs mentioned as well as in the spleen and ovary.

Whatever may be the adaptive movements of the valvulæ, the villi are the chief immediate organs of food absorption from the intestine. There are about four million of these organs in the human. They are irregular but in general finger-shaped organs varying in length from 0.5 to 3.0 millimeters. Their combined surface area, situated as they are on the valvulæ conniventes, increases the absorptive area of the intestine at least an hundred fold over what it would be were the gut a smooth-walled tube instead of one partly filled at times by these organs. The villus is a complex little organ for, besides its versatile and essential wall of columnar epithelium, it consists of smooth muscle, autonomic nerves, a conspicuous central lymphatic ("lacteal"), blood vessels, leucocytes, and connective tissue. It would be pedantic to venture conjecture as to the exact *modus operandi* of such a mechanism. Fat, however, is the only alimentary principle which is mechanically conveyed from the midst of the epithelial cells (where it is apparently synthesized from the fatty acids and glycerin) to the central lymphatic. The chief function of this "lacteal," so far as known, is to receive the fat globules and to forward them into the circulation proper via the thoracic duct. Howell says (1913): "The mechanism of absorption remains unexplained." It is, however, extremely probable that *the neuromuscular mechanism of the villus has, as part of its function at least, the compression of the villus under nervous requisition for more fat from other parts of the body.* On this basis the villus is understandable as in part a minute reservoir of adipose material, perhaps indeed chiefly for the greatly variable use of the nervous system, nerve-cells (chromatin) and nerve fibers (myelin) alike. They clearly make up by their number what each lacks in size.

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* Psychological Review, xxi, 3, May, 1914, illst'd, pp. 166-188.

The first effect, then, of too little exercise upon nutrition is that of a direct effect upon the muscles, and in this particular case, the digestive musculature.

In the second place, we must consider the effect of too little exercise upon nutrition through the nervous system. *The central nervous system lacks tone* as well as do the muscles when there is too little exercise. This lack of tone in the central nervous system helps to decrease the requisite tone in the digestive organs. A second effect, then, of atony, is a lack of tone in the nerve centers which have to do with the movements and the secretions of the digestive organs. There is a reflex and sympathetic control of the digestive apparatus, from the autonomic and from the central nervous system. When the nerve cells are not up to their normal standard, there is a lack of tone and invigoration from the spinal cord, and the sympathetic system fails to send impulses. The nerve cells are not up to their usual efficiency, perhaps because of a lessening of the chromatin granules always found in the cytoplasm of nerve cells. The lack of exercise affects the nerve centers as well as the muscles, and so the movements of the alimentary canal are less accurate and less vigorous, and, meanwhile, nerve stimulation itself is less vigorous to those parts.

Again, *the secretions of the alimentary canal are less active* and vigorous, and they are deficient in quantity, owing to the lack of all-round bodily exercise. No one has ever shown, so far as the writer knows, that these products are qualitatively changed.

A third effect of too little exercise upon nutrition is *inadequate* or "poor," *appetite.* Too little exercise lowers the appetite below the normal, or else the appetite is an artificial one, which is worse. If, owing to the sluggishness of the circulation and the atony of the muscles, the appetite be allowed to drop too low, there is a decreased demand for food, and the body is not nourished properly. The appetite for food and drink, in the case of the normal man doing little work, is for little food, while the man doing a great deal of work needs, requires, and wishes much food. In the normal, pristine individual that is the normal condition, and it is only because man has grown into *the habit of not adapting his food to the amount of his muscular work*, that the condition or ratio is not always in evidence. The normal appetite is the proper indicator of the amount of food required by the individual. On the other hand, if the appetite is kept up artificially, the person eats a useless lot of food. This leads to a "uric-acid diathesis" and to obesity, and there is a large amount of nitrogenous waste materials that must be got rid of somehow. These waste materials continually circulate in the blood and are oxidized and katabolized directly from the circulation. The nitrogen comes from the protein substances eaten, and, some think, is converted into uric acid. This acid then circulates in the blood, and causes pains in the joints, etc.—things known to the medical man of a generation ago under the term of "uric acid diathesis." In this condition there is an excess of protein ingested, due to an artificial appetite and the eating of large amounts of general food. The muscles do not use up the protein, as there is a small demand for nitrogenous food material because of a lack of exercise. It is supposed by some, that an excess of nitrogenous material passing for long through the kidneys, gives rise to some condition allied to Bright's disease. Over-stimulation of the kidneys might very reasonably give rise to interstitial nephritis, under conditions of too little flushing out.

Another effect of too little exercise upon nutrition is seen in the condition of *obesity.*

Perhaps it may be forgiven the writer if here he quotes seven paragraphs from an article[1] on overweight, which suggests the screaming wrong and the utter needlessness of this condition of overweight:

> Physiological obesity can always be reduced (as long as the kidneys, heart, and the other vital organs are sound and can stand the pressure) by a greatly increased amount of systematic exercise and by a reduction in the intake of food—the latter the more important. Increase the outgo of energy from the organism and decrease the intake of energy into the organism, and it is always possible to reduce truly physiological obesity. This is one place where a contrast appears between pathological and physiological corpulence. In many cases of physiological obesity the persons have weak hearts, stomachs, or kidneys, and these weaknesses properly prevent either a rapid decrease in the food or a rapid increase in the amount of fat-destroying exercise. Then, too, some unstable nervous systems cannot stand a quick decrease in the energy value of food, so that it is

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[1] Dearborn, G. V. N.: "Get Fat and—Die," Interstate Medical Journal, Vol. xxiv, No. 2, February, 1917.

not safe to decrease the food supply too rapidly.

Most of the false obesity cures bring about their effects, if there be any at all, by actually disturbing and deranging the process of digestion by a distinct pathological change, while they do not attempt to remove the cause of the superfluous amount of fat.

One way to remove the cause of physiological obesity is to reduce the metabolism of food. Give the person foods that are "filling," such as bran bread and fruits and top-of-the-ground vegetables, whose tissue-forming value is small, very small, as far as calories of energy are concerned. Cellulose and water! Another method of bringing about the same result is to drink a cup of sweet, weak coffee or to eat dessert or a few pieces of candy first, so that plainer foods become tame and unpleasant to the taste, and easily foregone. Some find it easier to omit all food one day, or even two, in every week, water being meanwhile freely taken.

Because the method puts one on his own feet and makes him master of himself, perhaps the most important way in which to reduce diet is to use continuous will power of restraint. Very few really fat people have sufficient will power, however, month after month, to reduce the diet in a systematic and scientific manner. Most of them, lacking the necessary strength thus to lessen their food, go to sanatoriums and there are put under strict surveillance as regards everything pertaining to their diet. For quite a percentage of far overweighted persons it is either this heroic treatment, passively endured, or nothing.

One thing is certain. For the far larger number of persons overweight who do not find it expedient to change their actual daily occupations from a low plane of energy expense (via muscular exercise) to a higher, it is quite futile to expect weight reduction by bodily work alone, whether in a fine gymnasium, on the farm, or elsewhere. The commoner experience of middle-aged women and men who seek thus to normalize themselves hygienically and cosmetically, of course, is to *gain weight* rather than lose after the first week or so. They actually improve their general condition, as well as their food appetite, so much by the daily hour or two of unwonted highly enjoyable general exercise that their metabolism is raised so that they "put on" fat. They take just enough exercise to normalize nutrition, but not nearly enough to burn up any tissue fat. But forty-eight hours a week of labor for each of the four weeks of several months would do it! And it is thus, and only thus for the most part, that the million retain the semblance of the properly human form, for their diet, for the most part, otherwise would be excessive.

Those who have *fatness thrust upon them* are the adipose victims of circumstances. Some of these are, of necessity, engaged in over-sedentary occupations; some are helpless cripples; some are ignorant; some are indifferent—*i.e.*, of swinish disposition; some are wise, but weak-willed; and some are strong-willed enough, but foolish or perhaps indifferent to the length of life or to the full measure of physical and moral manhood or womanhood. But with this, although a considerable class of the obese, we need not here concern ourselves, for the scientific conditions are like unto those of the persons who achieve fatness—although, humanly speaking, far harder, because less often relieved. Yet these, too, might readily be free—free of being inefficient; free of suffering unduly in a warm atmosphere year after year; of manifold personal dermal discomforts; of shortness of breath; of sundry dangers from accidents; free, finally, of the mathematic probability of death a number of years, perhaps, before their time were they of normal weight. Does this fact not mean much?

But, after all, the problem for the portly multitude of men and of the all-too-"motherly"(?) multitude of women is one of *general essential expediency plus human personality itself!* To be fat is *grossly inexpedient* if only the people knew it, but to conquer the fatness, humorous index of ignorance or sensuality for the most part, is to rise thereby to the full stature of the human, fashioned in the godlike image of superman. The victory is easily attained when conditions are not too adverse, and it is one which tends to satisfy the vanity or the pride in the dignity of the human form; it augments efficiency and tends to the prolongation of one's years. It truly is strange that still so few effectively realize these things. Who is the good twentieth-century prophet that, in tones which all may hear, will proclaim the wrong, its utter needlessness, and the manner, often easy enough, of its righting?

The treatment of obesity is an important thing to consider in the theory and the practice of physical education. Fat comes in mechancially and chemically in many diseases, especially in relation to the heart; here the presence of fat is an impediment and hindrance, as well as a cause of many disturbances in the organism.

The objection to *exercise during the process of digestion in the stomach,* is that it brings on a general muscular congestion, taking an excess of blood at the expense of the stomach. It is wrong to exercise violently immediately after a meal, because the muscles would then use the blood which should be in the stomach helping to digest the food. (Gently jolting exercises, such as sauntering, help digestion.) On the other hand, exercise within two or three hours after a meal is at the proper time, for under such conditions the blood is not needed in the process of digestion. We all know the difficulty of even trying to write or to study after a large meal. It does not make so much difference in the case of a small lunch, because the stomach, we may guess, is congested in proportion as it is full of food. By recent research it has been shown that the wall of the stomach constricts closely around the food, so that the more food a person eats the larger functionally is his stomach. Hard exercise after a hearty meal should not be indulged in, while, on the other hand, mild exercises, which tend to jolt the contents of the abdomen, are a distinct aid to digestion. Horseback riding is a fine form of exercise, and is a distinct aid. Walking, and even swinging in a hammock, aids digestion by serving to jolt the contents of the abdomen. The movements of the intestines are both pendular and peristaltic, and are distinctly aided by any mechanical movements of the body. An experiment illustrating the effect of exercise upon nutrition was carried out by Londe in 1860: Two dogs were given a big meal, and immediately afterwards one dog was submitted to violent exercise, while the other was allowed to repose. Two hours later both dogs were killed. It was found that the former had the meal already all in the intestines, entirely undigested, because it had been jolted out of its stomach into the gut by the violent exercise to which it had been submitted. The other dog had the food still in its stomach. The food was well mixed with gastric juice, and digestion was assured. This research shows that the long-standing supposition in regard to the effect of exercise after a hearty meal is a correct one. But see below.

Constipation is an important evil condition with which physical exercise and its lack have close relations. Gant's well-known treatise discusses the effects of exercise on constipation, under seven heads:

First, the heart-action and the circulation are increased by exercise, and any increase in these benefits constipation, because the processes of absorption, nutrition, and elimination are all increased by an increase in the circulation. An increase in the circulation through the intestines hastens the processes of absorption and of nutrition, and the elimination through the kidneys. Many people do not realize what an important factor constipation is in their general health, and of how they can be constipated and yet have movements of the bowels every day. There may be accumulations of waste materials in the large intestine that may stay there indefinitely. This sort of constipation may be nearly as bad, in so far as the absorption of toxins is concerned, and the atony of the muscles of the intestines, as any other kind. A case of complete constipation, with no evacuation of the feces, is fatal, but uncommon. Weeks may elapse.

A second effect of general muscular exercise upon constipation is that it brings about an increased oxidation of the fats and the carbohydrates with a correspondingly increased elimination of carbon dioxide. Exercise, by the oxidation of the carbohydrates and the fats taken into the body, through an increased elimination of carbon dioxide, stimulates, chemically, peristalsis in the intestines, thinks Gant. I am not aware that this supposition ever has been confirmed or that it can be shown to be of more than theoretic importance.

A third effect of general muscular exercise upon constipation, or a third method of the action of exercise upon constipation, is seen in an increased power of respiration. This causes a greater demand for oxygen, and this increase in respiration deepens each time the descent of the diaphragm. The diaphragm goes down oftener, further, and harder, and in this way there is a distinct massage carried out on the liver, the gall-bladder, and upon the transverse colon. This is the most important effect of exercise upon constipation. This increased action of the diaphragm, by its massaging effects upon the liver, increases the flow of bile, and increases the peristaltic movements in the intestines by its massage of the transverse colon. Gant shows that exercise also tends to increase antiperistalsis, which is peristaltic action from below upward, common in crustaceans, etc., and easily seen, with little trouble, in Daphnia.

A fourth effect of general muscular exercise on constipation is that it tends to soften the refuse matter which has accumulated in the large intestine and in the gut. By the stimulation of the pancreas, of the liver, and of the intestinal wall, the glands which pour their products out into the intestines are stimulated, and anything that serves to stimulate the secretions from the glands will bring about a softening of the feces.

A fifth effect of exercise upon constipation is along the line of a curative effect, in that exercise relieves and also lessens autointoxication. This is a form of poisoning due to some uneliminated matter formed within the body, and in which there is an absorption of various toxins from the large intestine back again into the blood. This matter is what Horace Fletcher objects to so strenuously. He says that if we were to reduce the amount of proteins consumed, we could lessen the number of bacteria in the intestines, and so lessen the amount of toxins absorbed into the blood. These toxins of bacterial origin, when they invade the system through the blood, give rise to headaches and to many indefinite things due to the evil absorption of decomposing substances, called toxins, from the large intestine. Exercise, by stimulating the movements of the large intestine, relieves this state of autointoxication. This autointoxication acts especially upon the nervous system of the individual concerned. When such a condition is present, his system, upon being relieved, gives a better chance for the normal action of the intestines. We have a sort of reflex action, in that the lessening of the toxins present in the blood allows the nervous system to act normally, and also allows its action upon the intestines to be normal, and so, indirectly, stimulates the movements of the gut.

A sixth effect of general muscular exercise upon constipation is an increase in general muscular strength. This, reflexly and sympathetically, aids the muscular power of the large intestine, and especially of the rectum. I have already shown how intimate is the sympathy between different parts of the musculature of the body. Anything that stimulates the skeletal muscles also affects the vegetative smooth muscles in all parts of the body in a more or less indirect way. The process of defecation concerned in the discharge of the feces is partly a voluntary and partly an involuntary process. It is partly a voluntary process in that is is aided by the abdominal walls. If the abdominal walls have been strengthened by exercise, they can exert a prompter and a harder effect, and so aid defecation.

The seventh effect of general all-round exercise upon constipation is an increased power in the peristaltic movements of the intestines, by a tonic stimulation of the intestinal nerves.

These seven principles are very important as applied to the condition known as constipation. Constipation is a very common condition, so these seven principles have an added value for every teacher of physical training. Many people suffering from constipation consult teachers of physical education. They think, rightly, that they may help them, as they consider their trouble not serious enough to warrant their consulting a physician. This condition is particularly prevalent among the women, in whom, especially, constipation is a matter of great practical detriment, for it can be the source of numerous ills. Massage of the abdomen is beneficial in some cases of extreme constipation, and in fact anything is beneficial that will increase the movements of the intestines.

Sugar. A few words about sugar as a food for the muscles. There is a research in this connection carried out on two schoolboys, aged respectively seventeen and nineteen. Both had the same practice every day, that is, rowing, and they practised two hours daily for two months, and then entered for the races. They were found to be overtrained, and the doctor fed them much sugar. They had as much sugar as they wished, sometimes eating as much as five ounces just before beginning their daily exercise with the oars. Immediately all signs of overtraining began to be abolished, and the result came in about three days from the time that the eating of sugar was advised. They entered the race and won, over a large number of antagonists who had not eaten any sugar. This demonstrates one use of sugar as a food for the muscles.

The ordinary sugars are glucose (grape sugar, dextrose), cane sugar, beet sugar, maple sugar, and levulose—a sugar abundant in figs, dates, and raisins. In practice, we would include sweet chocolate in this list, and we must deplore the strength of the prejudice against glucose.

Some years ago, Harley found that the daily consumption of seventeen and one-half ounces of sugar, more than one pound, daily, increased the power of his muscular work from 61 to 76%. A person daily consuming that amount of sugar would not get fat if he exercised enough to use it up. The maximum effect of the sugar taken in the above-cited illustration was in about two hours after it had been eaten. This same research was gone over by Schumberg, and the results were confirmed by him. Those results were that after eating sugar there is an acute and a marked increase in the power of work. As we know now, all the army diets contain a considerable amount of sugar. "Chocolates," etc., are ordered by the ton for the consumption of the army, and are part of the regular ration practically, if not technically. Queen Victoria of England at one time sent a half-pound of sweet chocolate to every British soldier in South Africa. Since that time candy has been included in the diet of every army in the world, especially in the form of chocolate. This chocolate is given to the army and to the navy on the basis that it is a concentrated and first-class food for physical exercise. Its calory value is per weight-unit more than five times that of lean beef, and it is not hard to digest, save to alimentary canals weak in fat digestion.

The fact that the maximum strengthening effect of sugar taken as a food comes in about two hours has been discovered empirically by many people on their own account, as well as by Harley.

Sugar, then, is an important and an immediate source of muscular strength, because it is metabolized easily in the tissues of the body and glycogen is made from it. Practically, then, it is only necessary for the blood to receive the digested sugar and to take it to the muscles, where it is immediately turned to glycogen and serves as the chief food of the muscle fibers. These facts in regard to sugar are something not very new and yet of recent development in their application. Twenty-five years ago there was not a trainer who would feed candy to a training squad.

A few words about *training diet*. We shall see that there is really nothing very special or peculiar about a training diet. It is not scientific to adapt the diet qualitatively to the kind of work a person is going to do, but it is necessary to adapt the diet somewhat quantitatively.

The training diet (a man or woman of athletic, or very active vocational, habits is "in training") should be ample, but not excessive in amount. I am quite sure that some training diets, extravagant in amount, are far excessive especially in the matter of lean flesh meat. On the other hand, the training diet should contain enough flesh meats, because meat, more than anything else, directly restores the wasting muscles. Sugar supplies the energy of the muscles more quickly and better than any other thing a person can eat. Some fat should be taken. The reason this is so is because the chief part of lean meat which is eaten is made up of the fat muscles of the animal, and the materials to be replaced in the human body are protein and lipoidal.

It certainly behooves college deans, university presidents, academy principals, private school proprietors and administrators, camp food-commissaries, and "such," to see well to it just now that patriotism be not made *an excuse for parsimony in feeding*,—as a matter important to good health, to efficiency, and to *next* year's tuitions. Cold, anxiety, and underfeeding all are helping in some institutions toward a most unpatriotic depression of efficiency and towards an increase of phthisis. For example: "We do not need to starve our own people. We have plenty for ourselves, and it is the firm policy of the Food Administration to retain for our people, by its control of exports, a sufficient supply of every essential foodstuff. We want nobody in our country to eat less than is necessary for good health and full strength, for America needs the full productive power of all its people."

The training diet should include plenty of water. This does not mean that a person needs to wash down his mouthfuls of food with gulps of water. It should be drunk with meals and between meals, but a man or a child should never wash food down mechanically. An abundant supply of water flushes out the tissues of the body and keeps the digestive apparatus loose and active. It is essential to the athlete.

Another characteristic requirement in the "training" diet of any physically very active individual is that it should have nothing in it to cause indigestion or any disturbance of the alimentary canal. Where an athlete is trained "up to the scratch," it would be a decided setback if he were to have an attack of diarrhea for even one day. Such an attack might offset all the training of weeks. For instance, baked beans are not good, owing to the essential oils contained in them. These oils are very irritating to some alimentary canals.

Another requirement in a training diet is that there should be more sugar than in the normal diet. Sugar is the best immediate source of muscular energy, but it must not be taken in such large amounts as to produce any disturbance of the digestive apparatus. It is beneficial to eat sugar, sweets and preserves, with a meal or soon after a meal, but never in such large amounts as to disturb digestion.

Another requirement in an ideal training diet is four meals daily instead of three or even two meals a day. With four meals a day, the athlete can digest more, and make better use of more, than if he were taking only three meals a day, and the athlete must be on a *high plane of metabolic efficiency*. One need not prescribe any particular foods for a training diet, except to define sugar as an essential requirement. Something solid but easily digestible, taken into the stomach late at night, often makes one sleep better, because it takes the blood out of the brain and brings it to the digestive apparatus. If J. F. Shepard's recent contention prove true (that sleep gives cerebral congestion, some other explanation must be sought. The best time to eat fruit is in the morning, and those in training need much of it.

Some of the relations of *coffee* (and of tea and cocoa) to muscular work: In this connection, take data from a research made by Rivers and Webber, and to be found in the *Journal of Physiology*, Vol. 36, p. 46, for the year 1907. They found, first, that caffein (theobromin is similar) increased the power of muscular work; second, they found signs of a double action: (*a*) an increase in the number of muscular contractions for a short time; (*b*) an increase in the degree and the extent of muscular contraction, for as long a time as the coffee is taken. This was a laboratory research, done with the ergograph, an instrument for measuring work done in muscular action. Probably their work was done in reference to the skeletal muscles. In general, coffee does away with temporary fatigue of the skeletal or cross-striated muscles. It increases the number of possible contractions for any time, and in any especially fatiguing work it is possible to make more contractions for a short time. The work of Hollingworth at Columbia fully corroborates (and extends) the results of this English research. Coffee immediately takes effect, perhaps in about three or four minutes.

Next consider the action of *tobacco* upon muscular work: Tobacco undoubtedly decreases both the desire and the capability for doing muscular work. There is no doubt of the above statement at all nowadays. Thus, coffee might be of use in a training diet, but it must never be used to such an excess as to keep the individual awake, for sleep sometimes is the most important of all things. In regard to tobacco in a training diet, I should say no tobacco at all (unless in the evening a pipe or two?), at least, none for hours before the contest or special exertion, because tobacco distinctly reduces muscular power, probably by nicotine's depression of the action of the motor end-places of cross-striated muscle.

Practically the same thing is true in regard to the use of *alcohol* in a training diet. Alcohol lessens the power of muscular (as of intellectual) work, and, physiologically speaking, it does so through the disturbance of coördination. The kinesthetic impulses are shut off and there cannot be from the cortex a proper coördination of the muscle fibers by the spinal grey. However, there is still a college prejudice in favor of the use of alcohol. This prejudice persists, though it has been demonstrated that its use is an absolute disadvantage in every respect to the athlete. There is here the greatest graft of money-expense to many of the varsity teams in that they are habitually inclined to think it necessary to have champagne! The use of alcohol in a training diet is out of date and one may be very emphatic on that score; snobbery underlies it, in part.

Dean LeBaron Russell Briggs, chairman of the Harvard Athletic Committee, and wise as well as influential, in his recent report well stated an obvious matter (and more politely than the "snobbery" above) as follows:—

"One thing is certain, if when the world is at peace again, and intercollegiate contests are resumed, we fail to reduce the cost of coaching and training, to inculcate notions less luxurious, and to foster a better understanding of the relation between athletics and other interests in life, we shall lose one of the opportunities so dearly bought by this war."

The universities have been prostituting the good name of physical education out of snobbery and cheap notoriety seeking, for the sake of amusing some of their alumni for a few hours each year; while the students who *need* the exercise are grinding themselves into a kyphosis or indolently watching their hired players overtrain.

Next, a research on the effect of *strychnin* on muscular work. It was made by an Englishman, Varrier-Jones, and is to be found in the *American Journal of Physiology,* 1907. He found that strychnin somewhat increased the power of muscular work at first. This probably occurred through a stimulation of the reflex centers in the spinal cord. If too much strychnin be taken of course it will tend to lessen your muscular work for good! A second result obtained in this research was that the stimulating effect of strychnin gradually disappears in about three hours' time. In Varrier-Jones's opinion, the action of strychnin is to open wider the synapses of the afferent or ingoing side of the reflex arc. This effect of strychnin was long ago discovered, empirically, by horse-trainers, whose custom it long was to inject strychnia into the horses before the races came off. In ordinary doses, strychnin does not seem to do much harm, the chief danger being that a person will take too much and thereby make himself very nervous.

Strychnin is one of the standard drugs of the world, and it is very widely used as a nerve stimulant, especially as nux vomica. It need not be pointed out that the use of methods and means as artificial as is strychnia is wholly unethical in sport of man or beast. It is mentioned here only because it is a neuromuscular stimulant among stimulants. Adrenin would seemingly have far more appropriate use in a contest of brawn, but whether its use would be ethical or not would be for the judges to determine.

The main thing in a training diet or in a system of training for athletic amateurs, as for amateur or professional athletes, is to see to it that the individuals get plenty of sleep; that they eliminate the use of alcohol and tobacco; and that the training diet contains the essential metabolic requirements, chemically and digestionally.

The second part of our discussion of the effects of exercise on nutrition comes under the head of *"too much exercise."* There is hardly any limit to all-around normal, outdoor exercise, when the exerciser really is "in training," up to it. The actual recorded maximum was made on a static bicycle in a calorimeter some years ago, and was 14,000 calories of energy a day. This is hard work. For example, most physicians are not expending over 3500 calories of energy an ordinary day at the outside limit. The ordinary and practical limit of the lumberman would be found to be about 7000 or 8000 calories of energy a day. All the conditions requiring a large amount of metabolism (long hours of labor, and oftentimes exposure to the cold and wet and dampness) would demand about this expenditure of energy each working day. The metabolic planes of efficiency must be maintained in order to reach and to maintain the highest limit of motor efficiency. In other words, when the appetite, the supply of food, and its absorptive consumption keep pace with katabolism and excretion, there is scarcely any theoretic limit to the height of the dynamic efficiency which an individual may attain, save that of his actual structure. Plenty of sound sleep and abundant air enable a person to live on a very high plane of efficiency. Do not imagine that one gains anything in undersleeping. Every hour of sleep is worth much to the organism—more than many trainers realize.

Athletes in training in the average college and elsewhere tend to approach the plane of efficiency maintained by the lumberman. They are much more liable, however, to have a dangerous overdevelopment of the digestive organs, and so are in more danger of "going stale," because they are living under somewhat abnormal conditions as compared with the industrial lumberman. Athletes in training in college, for example, are pretty sure not to get as much sleep. They are more liable to be tempted to drink, and to smoke excessively, so that, on the whole, they are not comparable in practice, in so far as their plane of efficiency is concerned, with the man doing hard outdoor daily work. The exact data for comparison between the two are lacking, but the capable lumberman is certainly our kingly athlete! College athletics might do worse than to use him as the model for royal manly training.

Hypoliposis comes in under this heading of over-exertion. In a recent lecture, "Get Lean and—Homely," the author considered leanness to be occasioned mostly by seven conditions: 1, innutrition—too little food; 2, over-exercise of muscle-masses; 3, general nervousness; 4, worrying too much; 5, the spare-diet habit; 6, oversecretion of the posterior part of the hypophysis (pituitary); and 7 (perhaps a phase of No. 6?), heredity. Even if over-leanness after mid-age be a sign of longevity, the cosmetic considerations are important, especially in women; and lean persons suffer greatly in winter from cold, and are handicapped in certain diseases. A "lucky thirteen" words stand for relief from hypoliposis: general food-abundance, fats, starch, sugar, breads and cereals, storage vegetables, nuts and dried fruits, abundant water, holiday, indolence, easy outdoor life, medical advice, and a warm climate.

A few remarks about the effect of muscular work upon *digestibility,* meaning thereby the person's ability to digest. In this connection we may bring again to notice a research made by E. C. Wait, published by the U. S. Dept. of Agriculture, and to be found in Experiment Station Bulletin No. 117. The results found in this research are negative, but none the less they are important in that they confirm what many people have long believed. In the first place, he found no difference in the *thoroughness* of the process of digestion of the food: (*a*) when the subject was at rest, and, (*b*) when the subject was walking up and down a hill about four hundred feet high. Common observation corroborates this fact. The second result in this research of Wait's is that he found no constant effect of the climbing on the excretion of nitrogen, which depends upon the relative amount of the intake of food. On the other hand, nerve fatigue and muscle fatigue are apt to cause indigestion, probably from some emotional depression.

Kadegrobow, in his research made on dogs, found that active exercise delayed the secretion of pepsin somewhat. He compared in this research dogs who rested after a big meal with those who then were worked.

Gerhartz's work, found in Pflüger's *Archives,* July, 1910, was along this same line. He found that food consumption was not increased by exercise, and that the protein katabolism was somewhat lessened! He found that violent exercise before eating did not make the dogs eat more. They got their energy for the work out of the carbohydrate part of their food. This research confirms many others showing that carbohydrates and fats are the important sources of muscular energy. The results of this research are contrary to what one might expect at first, for we would expect that the dog that was working hard would eat more than if he had been resting. The discrepancy undoubtedly is temporary, and psychological rather than metabolic. It is, of course, the common experience that we are distinctly more eager for food and that we eat more of it, after either muscular or mental work. We should develop this conscious guidance.

So much in regard to a few miscellaneous nutritional topics as they are related to physical exertion and exercise. However hard to teach to the world of men and women, assuredly they are of quite basal importance, years on end, in the economic conduct of physiologic life.

THE VENEREAL PROBLEM—THE ARMY VIEWPOINT.

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The army viewpoint is that between the battle-line of Von Hindenburg and that of venereal disease there is a very real connection. The former is a visible, tangible barrier to the Allied advance upon Berlin, the latter a vast hidden barrier within the ranks of the Allied powers. To reach the German capital requires *men,* and many of them. Men—thousands of men—have already ceased fighting, and been carried in tow, because of venereal disease. This hidden enemy in our midst has long left behind in its wake a spectacle of human devastation, impaired efficiency and wreckage of vitality. Through its ravages many thousands of men have been rendered useless and carried on the liability list through the great battles of the war, through hours when there was a dire need for fighting power.

Three and a half years' observation of the great war have shown this Government that one of its foremost wartime duties is to protect its men from venereal disease. The experiences of the European nations, coupled with those of our own troops on the Mexican border, have been object lessons of singular value. We now know that man-power alone will win the war, and that every unit of man-power that is incapacitated from venereal infection and rendered useless as a fighting force is a greater loss than that of a man killed in action. The former is struck by an enemy from behind before he has had a chance to register an offensive blow, while the latter dies on the firing line, in a grapple with the enemy.

It is the Secretary of the Navy who has stated that, "Venereal disease is deadlier than tuberculosis. It is deadlier than cancer. War itself counts less toll of human life than this infection, whose ravages are more fearful than the Marne, Somme, Verdun, or any other bloody battlefield.

"From every nation comes evidence in support of this statement: Sixty thousand under treatment for venereal disease mentioned in one Austrian report; thirty-five thousand among the German forces during the first five months of their occupation of Belgium; seventy-eight thousand reported in late figures from the British Army; French reports equally disturbing."

Conservation is the by-word of the times. Our people have been widely educated as to the necessity for the conservation of food, fuel, our natural resources and even of human effort. Effective organizations and leaders are operating in these interests. But little enough has been said of the need for the conserving of man-power and for the control of venereal diseases, which constitute the gravest enemy to its conservation. A glimpse of a single national army cantonment with all its intricacies of supply and operation gives a small cross-section view of what merely one phase of war is. The vast human and material resources necessary to the maintenance of the war machine are incomprehensible. Any loss of man-power, attendant upon unnecessary causes, is keenly felt in the operation of this machine. Again it is Mr. Daniels whose words show vividly the effect of just such a loss, when he says that, "During the last statistical year, men of the American Navy lost 141,378 days by such diseases."

A survey of the experiences of the European nations, without quoting any figures of uncertain authorship, shows that hundreds of thousands of men, on both sides, have been incapacitated from venereal infection; that one Allied army during the first year of the war had more men rendered inactive through sex diseases than through wounds, and that numbers equivalent to whole divisions of the Austrian Army have been confined to hospitals for similar reasons.

Germany, a nation dependent for its future progress and position in the world upon the amount and calibre of its population, is clearly alive to the venereal menace, as shown by Neisser's statement that, "The very worst part of the venereal diseases is not the diseased condition immediately following infection, but the ailments frequently developing in later years, when the war is long past and the old infection already forgotten, and the transmission of the disease to the family after the return of the troops to their homes.

"Certainly we are justified in asking the question: 'Shall we not have cripples and dependents enough to provide for as a result of wounds and hardships?' Cannot the family at least be spared this misery, and the nation this enormous financial burden, brought about by the venereal diseases? And we know how often the seemingly healthy, believing themselves really cured, infect their wives and so frequently make healthy progeny impossible. And yet after this war there is nothing our country will be more in need of than a growing population."

Blaschko, too, properly evaluates the future health of his people by saying that "The venereal diseases, gonorrhea no less than syphilis, are so great and permanent a danger to our people that every blunder, every piece of negligence of which we are guilty today will be bitterly avenged. So many thousands of the flower of our nation are falling victims to the bullets of the enemy that we must guard and value the health of the rest as a dear possession."

From these passages we perceive Germany and Austria alive to their after-war need for fit man-power. From other German and Austrian sources, which I have not time to quote, we find an analysis made of the problem of prostitution, and we see the rapid passing into obloquy of the theory of the efficiency of reglementation and segregation of prostitution, and we find also that the enemy nations have learned to recognize the menace of alcohol, prostitution, and the theory that sexual indulgence is necessary to health. The prevalence of this latter theory has done much to keep universally alive a tolerated traffic in prostitution.

Yet we do not need to turn to the map of Europe to be taught this lesson. The experiences of American troops on the Mexican border during 1916 furnished an adequate and more keenly felt lesson.

It is wise to turn for information to an authoritative report, that of Dr. M. J. Exner, on "Prostitution in Its Relation to the Army on the Mexican Border."

Summarizing the situation, Dr. Exner writes, in part, that, "The experience on the Mexican border shows that, so long as the handling of the problem of prostitution, as it affects the army, is left to the discretion of the individual commanders, there can be no hope of a satisfactory solution. Their attitude is too varied, and their knowledge of the problem too backward. There is need of as clearly defined a policy of moral sanitation, as the government has of physical sanitation, and that policy must be made effective in uniform procedure through military order from headquarters. Any policy with reference to this question, to be sound or effective in preserving the moral integrity of the soldier, must be based on the assumption that sexual indulgence is unnecessary.

"Prostitution in relation to the army is a question with which the citizens of this country, as a whole, must more fully concern themselves, for it is not likely that the army will proceed in advance of public opinion and demand."

Likewise, Dr. Exner narrates the proven menace of alcohol to the troops on the Mexican border.

The experiences of United States troops have thus shown again, in no uncertain terms, the threefold menace of alcohol, regulation of prostitution and the theory of the necessity for sex indulgence. The lessons of the European War have now been supplemented by those learned on American soil and among American troops.

On the fifth of April came the declaration of war. On the eighteenth of May came the approval by the House of Representatives of the so-called Selective Service Act, Section 12 of which embodied the prohibition of the sale of liquor to soldiers. And now, early in February, has come a further drastic and highly effective regulation making it a crime to give, serve or knowingly deliver liquor to a soldier in any place other than in a private home to bona-fide guests. As a result of this new measure, no longer is it necessary to prove a sale of liquor to a soldier by a boot-legger. The mere giving of it on his part, or on the part of any kind-hearted hotel waiter or female escort, is sufficient for arrest and federal prosecution. Every American should take pride in the thorough protection thus accorded its fighting forces by the Government.

Section 13 of the Selective Service Act empowers the President, through the Secretaries, to take such measures as are by him deemed necessary to prevent the setting up or keeping of houses of ill fame in the vicinity of any military establishment. The Secretaries of War and the Navy, since that time, have designated five miles as an effective radius about each military and naval station in which this practice shall be prohibited.

Underlying these measures there lies the firm belief and avowed principle of the President and the Secretaries that sexual continence is compatible with health and is the best and only sure preventive of venereal infection.

Thus government regulation has struck a blow of no uncertain force at the three-cornered menace, and the country at large is now aware that in these matters the Government has been guided only by principles of idealism and humanity.

Twenty years hence America will be aware of the importance of these steps when she surveys the effects of the World War and realizes that among her own sons the amount of venereal disease is considerably less than that among the sons of Britain, France, Germany and Austria. Future generations of America's manhood and womanhood, free from the burden of widespread venereal infection, will rightfully bear everlasting gratitude to the leaders of today, who saw the need for preventive legislation, and to the Secretaries of War and the Navy for their clear-toned dicta and their organization, in a fashion not known to other nations, of all possible forces for the protection of our fighting men.

Illegitimacy, sterility and blindness, and other maladies which are the after-effects of syphilis and gonorrhea and which reach out "to the third and fourth generations" to claim their toll, will be materially decreased by this crusade for continence. The burden of our posterity is today being made lighter. Morality is coming to the fore. It is being recognized as an essential. The people of this land are willing to endure the normal ravages of war, and in that to play their full part, but they refuse to allow America's manhood and womanhood to prostrate their virtue in the stress and recklessness of the hour. War is a ghastly thing at best; it strips a nation of its men and resources, and halts its normal progress. Nevertheless, war is heroic and justifiable in proportion to the worth of the cause it is fought for. Yet how much more ghastly if it must inevitably take its toll of the nation's standards of morality, the eternal qualities that make life worth living. And it is America's mission not merely to win the war, but to win it with a manhood and womanhood which have stood the test of battle and inward struggle, and have emerged unbesmirched and by fire refined. The body of the nation is ready for the sacrifice, but the soul—never!

From the experiences of the European nations America can profit much, and as she takes her place beside the gallant British, French, and Italian forces, she is able to guard against evils which have done much to undermine their vitality and fighting power. Today as we survey the situations on the Russian, French, and Italian fronts and contemplate the fact that thousands of troops are on the inactive list from venereal infection, we cannot but wish that those men might now be fit to fight, fit to stem the tide of the enemy onslaught. The lesson strikes home to American hearts, and the prevention of the development of any such inactive list of American troops is now the assumed responsibility of our Government.

Since the declaration of war, from one end of the country to the other, there has been in progress a general internal house-cleaning for the safeguarding of our fighting forces. Numerous "Red Light" districts have been closed, the illegal sale, and just recently the gift, of liquor to soldiers has been carefully watched and, to a large extent, reduced, and gambling has been curbed. Nowhere has a tolerant attitude toward these three types of vice been allowed, and for their repression, coöperation between local, state, and national forces has been necessary and generally secured. San Antonio, San Francisco, New Orleans, Little Rock, Newport News, Newport, Boston, Portland (Maine), and other localities have come in for their share of criticism, but have rallied in true American spirit to eliminate their shares of the nation's menace, and have, with one accord, rejoiced in the results and have learned to realize, in the words of Major Bascom Johnson, Director of Law Enforcement for the Commissions on Training Camp Activities, that "Municipal house-cleaning, like domestic house-cleaning, requires constant vigilance." With the elimination of the Barbary Coast in San Francisco, and the closing of the noted New Orleans "crib" district, the "Red Light" district becomes almost a thing of the past, and certainly a thing generally condemned.

This house-cleaning alone has been inadequate. Along with it preventive measures have been necessary. General education on venereal diseases, on the facts of prostitution, and on the urgent need for conserving the vitality of our American men and women has advanced at a rate that is unprecedented, and due only to the nation's unity of purpose and eagerness to face facts, when the failure to face them spells impaired efficiency, and the prolongation of the war. We find men and women and young people commencing to talk about venereal diseases with unabashed countenances; we find factories beginning to educate their employees on the menace of the venereal diseases and the need for the treatment of them; we find these factories, in some cases, supplying such treatment, and we find civil communities ready to establish venereal clinics, state and local health authorities and legislative bodies ready to declare venereal disease rightfully reportable with other communicable diseases, and we find the accelerated manufacture and distribution of salvarsan for the treatment of the increasing number of cases coming to light. For example, California has appropriated $30,000 annually for the duration of the war for a Bureau of Venereal Diseases, and by the end of the first year of the war the municipalities, counties and the state will have expended $100,000 on this program in all its phases; Massachusetts and Connecticut, beginning February first, have placed venereal diseases upon their reportable list, and the former is manufacturing salvarsan at the rate of 3500 doses a month for distribution to approved clinics. The Massachusetts program also provides for the establishment of venereal clinics under probable state subsidy in twelve cities of the Commonwealth. The city of Newport News, Va., in close proximity to Camp Lee, after vigorous repression of prostitution and the resulting complete overtaxing of the local jail facilities, has found it necessary and expedient to demand the purchase of a city farm to accommodate and salvage the large number of apprehended prostitutes. This series of developments is indicative of nation-wide progress.

Within the Army itself increasing success is being attained in combating venereal diseases. The Surgeon-General of the Army has gathered about him a Rotary Commission of experts to advise on venereal disease treatment and control, and in each cantonment and camp genito-urinary specialists and syphilologists are stationed to administer treatment and carry out control.

Bi-weekly and, in some cases, weekly inspections ("short-arm" inspections) are held to uncover new cases, occurring at unannounced times to prevent the concealing of symptoms by the infected men.

The men are required to attend compulsory lectures by experts on these subjects; each organization commander is also required to inform himself on the subject of venereal disease and to instruct his men accordingly; approved literature is distributed to every man, in some cases each man being required to display, at kit inspection, a printed card warning him against the diseases; poster exhibits, stereomotorgraph, automatic lantern-slide projection machine and motion picture films on social hygiene are being used and being prepared for use among our fighting men. Early (prophylactic) treatment is given to men who have exposed themselves to infection, a remedial and preventive procedure that is readily understood if approached in the right light, and the purpose of which I shall briefly explain.

Once a man has been so unfortunate as to have exposed himself to possible infection by consorting with a prostitute or any loose woman, he becomes not only a possible carrier of infection, but a possible loss to his fighting organization. His infection must be eliminated at the start or prevented from developing by early treatment, and he must likewise be maintained as a fighting unit. His case must be regarded as a medical problem, as a potential source of danger to his fellow soldiers, and he must furthermore be regarded as a needed unit of man-power. Once he has exposed himself to infection it befits the army to fulfil its obligation to protect its men from exposure to every focus of communicable disease. Every mother who sends her son to the ranks expects him to be safeguarded from such exposure, whether the focus be one of smallpox or syphilis. In the administering of early treatment, or prophylactic treatment, at every regimental infirmary and at stations established for the purpose in the nearby cities and travel gateways, such as we have in Boston, Lowell, and Ayer, the venereal rate is in a measure reduced because the infection is nipped in the bud. The effectiveness of this practice is further insured by a military requirement that the soldier must report for this treatment after exposure to infection, and that he shall be court-martialed if he later develops infection and has not previously reported for the early treatment. Thus a penalty is placed upon the man who, after indulging himself, and exposing himself to infection, takes it upon himself to endanger the well-being of others by a refusal to receive this early treatment.

This practice is compatible both with principles of medicine and morality. The matter here for concern is one of safeguarding or restoring fighting efficiency and elimination of disease, and one which must be freed from entanglement with moral issues. It is the function of the constructive and moral forces to prevent the exposure from occurring, to prevent the individual from seeking unwholesome diversion by supplying the wholesome in its stead.

The Army and the Navy regard the construction and preventive side of the problem as the most important, and upon that side endeavor to provide for the soldier wholesome recreation and counter-attractions to keep him from a desire for harmful pleasures. Morality, continence, idealism and practical religion are inculcated in the troops by the appeal and example of the officers, by the Y. M. C. A., by the Knights of Columbus, and the chaplains; recreation, athletics, amusement and instructive pursuits are supplied by these and other organizations working in the camps and in the extra-cantonment zone and in the towns and cities slightly removed from the camps.

And this leads into the field of the Commissions on Training Camp Activities, appointed by the Secretaries of War and the Navy for the purpose of keeping themselves informed as to prostitution and the illegal liquor traffic in camp environments, and of suppressing this dual evil, and for the purpose of unifying, coördinating and supervising all the agencies operating for the welfare of the soldier and sailor. These Commissions have been effective in obtaining a full measure of law enforcement and approved recreational activity within and in the vicinity of military camps and naval stations.

Reducing the highly organized work of these Commissions to their simplest terms, it is their function to see that the men are properly safeguarded from moral hazards from the time they leave home as civilians to join the ranks until they are returned again to civil life. To effect this result this comprehensive, constructive, preventive, and repressive program has been evolved.

America expects great things of her soldiers, and in no war has she expected more than in the present titanic struggle. It is the nation's duty to her defenders to return them home healthy in so far as this is humanly possible.

Father, mother, wife and sweetheart are waiting to welcome the boys home and the Government is now endeavoring to safeguard the happiness of this home-coming moment.

The Surgeon-General of the Army has taken a pioneer stand in the combat against venereal diseases, and, among other preventive and repressive measures, has organized a group of his officers to work in the extra-cantonment areas for the prevention of venereal disease. These officers are members of the Sanitary Corps, assigned to the Venereal Disease Section of the Division of Infectious Diseases of the Surgeon-General's office. In the control of venereal diseases in so far as the work of these men necessitates law-enforcement measures to combat prostitution and the illegal sale or gift of liquor, these officers coöperate with the Law-Enforcement Division of the Commission on Training Camp Activities. It is their function also to enlist civilian coöperation in combating venereal diseases, through the establishment of venereal clinics and the necessary institutions for the treatment and confinement of the convicted prostitute and incorrigible patient, through the institution of adequate medical and legal machinery, through local vigilance committees, through educational measures and social service follow-up work with girls detained, or arrested, by the police, and of girls supposed to be sources of venereal infection.

Following up the reported sources of infection of a soldier or sailor and ridding the civil community of this focus of infection is a new but important ramification of the venereal disease program of the Army and Navy. Among the venereal patients at the regimental infirmaries and at the base hospitals in many of the Army cantonments, and similarly in the Navy, the system is now in vogue of questioning the patient as to the source of his infection. In many cases it is possible to obtain from the infected man the name and address of the woman from whom the infection was acquired, and in these cases the civil community has a fixed responsibility to insist upon the treatment of these sources. The destructive power of this focus of disease is more than the equivalent of a rapacious enemy in our midst, and there is no community that cannot do an additional bit toward winning the war by determining who are these dangerous disease carriers and by placing them out of reach of our present or future fighting men.

In following up the cases stated to be sources of infection the case worker generally meets either a young and ignorant girl or a professional prostitute. In the former case it is the policy to use persuasion to get the girl voluntarily to receive treatment. If she realizes that state and federal officials are interested in her case and that public opinion is rapidly demanding her treatment she may wisely accept it; but in the latter case of the hardened professional prostitute it will often be found necessary to obtain police observation of the case for commission of a court offense, which is generally not difficult to obtain.

This type of work is new, and machinery to handle it must be developed as the work progresses. Public opinion seems to incline toward the view that the infected incorrigible woman and the professional prostitute are a sufficient menace to public health to warrant their arrest and forced detention and treatment.

The following social case history sheet is in use at Camp Devens:

Date Base Hospital, Camp Devens, Mass.
Venereal Section.

Social Case Sheet.

Diagnosis { Laboratory
Clinical
Patient's Name Rank Number Unit
Date of Exposure to Infection and of First Symptoms
Source of Infection—Woman's Name and Address, if possible
Would patient be willing to identify her?
Was she paid? (in any way, monetary or otherwise)
(State particulars.)

Ascertain all facts in reference to woman believed to be the source of infection. The following facts should be included:
Age
Social Condition
Occupation
Single, married, divorced, widowed
Had either the patient or source of infection indulged in alcohol at the time of infection?
Did infection take place in a house of prostitution? (Give particulars)
What venereal prophylaxis was used and by whom was it administered?
How long after exposure was venereal prophylaxis used?
Do you know of other cases infected from the same source?
Did the proprietor or keeper of the house know the room was to be used for immoral purposes?

I have not discussed how this whole program is to be executed among our armies overseas. There the problem will be an increasing one, one where policing and repression will probably dominate over prevention and education. Suffice it to say, that every effort will be put forth to carry overseas the Government's present comprehensive program.

Some are prone to believe that the venereal rate in our army is immeasurably higher than it is. The rate in all branches of our Army is not high, and its continued decrease is indicative of the progress being made by real preventive and repressive measures. For example, during the initial three-month period of the life of our National Army, the combined venereal rate per thousand men of the Regular, National Guard and National Armies was 121.9. The individual rate per thousand men of the Regular Army during that period was 88. The rate per thousand in the National Army was 162.4. Thus it can be seen that there were approximately double the number of venereal cases among the drafted men that there were among the regulars. This is a startling fact. Likewise, after four months of the life of the National Army the rates in these two armies were nearly the same, and after the drafted men had continued under military discipline the admission rate for venereal disease became normal, and lower than that among the regulars.

The lesson of this is clear. The National Army is a body of civilians recently transformed to the military, and the venereal rate among them, picked men, is by no means in excess of the prevailing rate among the present civil population. And the reason for this is clear, yet only now being realized. The soldier is carefully educated as to the nature and ravages of venereal diseases, measures are taken to prevent his seeking irrational diversion which might cause infection, and furthermore he is treated immediately upon his falling a victim to any of this group of diseases, while the civilian, as a general rule, has not only been ignorant as to the nature of the diseases, but also as to the method of cure. The amount of unnecessary disease, suffering and unhappiness attendant upon this state of ignorance is appalling, and consequently one of the immediate needs of the time is for a widespread enlightenment of the public upon the facts. At last this is coming. Progress in this respect since the fifth day of April, when America entered the lists, indicates that the public is not only willing to face the facts, but also demanding them. The origin and center of this education should be in the home, where father and mother by a gradual process should impart to son and daughter facts they should know. This essential, I believe, has been largely disregarded by most present-day parents. Furthermore, there is no organization, institution or public organ that cannot and should not take a common stand in furthering this program. Society today calls upon the government, the press, the church, the school, the judiciary, the health department, the manufacturer, the employer, the men's club and the women's club to assume positions of leadership in this regard, for each of these institutions is responsible in a measure for the welfare of those who come within its reach.

Taking the city as a unit, every man, woman and young person should know the facts of the case, and every city should have at least one reputable, authorized venereal clinic for treatment of those diseased. Yet this whole program of education and treatment will advance no more rapidly than warranted by the stimulus of public opinion.

In the fight against yellow fever, led by Surgeon-General Gorgas of the Army, it was public opinion which determined the measure of success achieved. The fight against venereal diseases, also sponsored by him and conducted with the same strategy and thoroughness, is again dependent upon public sentiment for its advancement. Each of these crusades has resolved itself into a question of method. To combat venereal diseases some adhere that it is better to hide one's head in the sand with the ostrich in an attempt to dodge the facts and conceal the danger. But, fortunately, the national and world crises and the immediate need of conserving man-power have shown this class of reticent and excessively immaculate individuals that they and the ostrich too can make a better fight in the open and in full view of their adversary.

The responsibility of the civil community to the Army and Navy, as well as to itself, is first of all to conduct a thorough campaign of education upon the nature and danger of venereal diseases, and this campaign may well furnish a platform of unity for the government, the press, the church, the doctor, the employer and the lay organization and club.

Secondly, the enforced treatment of all known infected individuals should be instituted and, along with this, there should be an attempt made to locate all existing foci. This requires legislation or regulation making venereal diseases reportable with other communicable diseases, it requires the establishment of approved clinics for treatment, operated preferably at night under trained personnel, including one or more workers to follow up individual cases. It requires legal machinery also to put the quack and charlatan out of business and also to prevent the druggist from prescribing for a venereal disease.

Law enforcement is the third essential. Where prostitution exists and where illegal liquor traffic exists, no matter how mild it may be or under what subterfuge it is able to operate, either or both must be stamped out. However spotless a town or city may be,—and each citizen is apt to take a millennial view of his own town,—somewhere there can be found work for the vigilant law enforcer. He will generally find that the existing legal machinery and prevailing legal attitude are inadequate to cope fully with the increasing problem.

When vice is repressed, a substitute must be supplied to interest those who before were attracted by its accessibility and superficial glamour. Consequently there has developed the need for properly supervised amusement, recreation and counter-attractions of all kinds. This preventive principle of the counter-move has developed mainly in connection with the military and naval camps, but it is equally applicable to civil life. Why should not every large community maintain as a part of its permanent government an expert on recreation and an expert on vice repression?

It is gratifying to note that, under the impetus of the war, civil communities are operating along these four lines. Ten peace years could not have brought us the progress in this respect that one year of the conflict has done. From all sides we hear an increasing demand for facts. Soldier and civilian alike have a right to know the truth. Education, prevention and treatment are accorded the soldier of today. Why should they not also be accorded the civilian of today who is to be the soldier of tomorrow? The present drafted army has a venereal rate in excess of that of the regular army, and the second five hundred thousand of drafted men may be expected to maintain a rate correspondingly high unless the civil community assumes the responsibility of reducing it.

Prostitution and its counterpart, venereal disease, constitute a problem of hygiene and morality. On the hygienic side it is imperative that we locate infection, treat it and cure it. From the standpoint of morality we are challenged to prevent prostitution, to conserve morality and to stimulate idealism. The two phases are closely interwoven; the medical man and the moralist are working toward the same goal, the elimination of the social evil. Hence their efforts should be coöperative. The medical aspects of the problem have been treated at some length, but the moral side is of the greater import. In this crusade of treatment, repression, prevention and education we are battling for the fitness of our future generations, to give posterity a past to be proud of, unblemished physically by disease and morally by incontinence and the spirit of personal abandon. We are fighting to keep future generations out of blind homes, to reduce our syphilitic population (now eight per cent. of the total), and our large body of insane. We are fighting to prevent the broken hearts of American parents and the physical and moral wreckage of their descendants. Is this a fight which can be won by any sanitary regulation or pragmatic philosophy? Can it be won by anything short of the dynamic of a powerful idealism, which is inherent in every last one of us and which we may well cherish—in the words of Major Edward L. Keyes, Jr., with the knowledge that "our ideals are essential to the progress of our race."

The issue of the hour is the winning of the war. Anything which impedes the earliest possible attainment of this end is the nation's menace. Conserving food, fuel and other resources is now engrossing the people's attention because these are immediately essential to the conduct of the great war enterprise; but of relatively greater importance, though less widely understood because hitherto concealed, is the immediate need for the control of venereal disease, as a direct conserver of *men,* as a means of adding power to the impending Allied drive upon the enemy, which is to scatter Hindenburg and his forces in retreat upon Berlin.

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THE SIGNIFICANCE OF VASCULAR HYPERTENSION.

The importance of the blood-pressure apparatus—the sphygmomanometer—in the diagnosis of disease can hardly be overestimated, and the taking of the blood-pressure record is now never left out of a careful examination. There is no doubt that the finger of the experienced examiner can detect marked variations in pressure, but such a method of blood-pressure determination is so unreliable, not to say unscientific, that no real reliance can be placed on it. Yet when the fact of high blood pressure has been established it is still a question whether it has any pathological significance, and if it has, whether it is a distinct clinical entity or whether it is only a forerunner of other pathological conditions. While high blood pressure is usually associated with certain chronic diseases—cardiovascular and renal diseases—it is entirely likely that there are some patients in whom all the symptoms suggestive of hypertension are due solely to the hypertension, and not at all to associated diseases or toxemias. Usually, however, when no pathological conditions are established it will be found that the hypertension is due to some form of intoxication. It may be due to chronic intestinal intoxication, defective metabolism and associated metabolic conditions, syphilis, gout, alcohol, or lead. Many of these non-organic cases of vascular hypertension may return to normal tension on the removal of the causes and proper treatment. On the other hand, if these intoxications are continued unchecked they will produce the fibrotic conditions associated with permanent hypertension. Very often, indeed, the onset of the usually insidious arteriosclerosis is with idiopathic hypertension. An intermittent hypertension is rather a sign of toxemia, while a continued hypertension is a sign of disease. But cardiac hypertrophy and permanent hypertension may result from continued and unchecked attacks of intermittent hypertension.

The use of drugs, in whatever form, which stimulate the vasomotor centers, or which stimulate the suprarenals to hypersecretion over long periods are very likely to be a cause of hypertension. This applies particularly to nicotin and caffein. In the same way the excessive consumption of proteins may act the same way because of the presence of the protein extractives. Likewise, very hard work, competitive athletics, hard training cause first high tension, and then hypertrophy, arteriosclerosis, and permanent high pressure. So much high tension accompanies renal disease that the two are nearly always associated together. Syphilis is, perhaps, the only condition in which there is as much high tension as in renal disease, but without the presence of the latter. High pressure is too often followed by renal symptoms. It is the experience of most observers that if a case of hypertension is watched for some time albumin and casts will be soon discovered. Of course, the height of the mercury in the sphygmomanometer must not be taken by itself as an indicator of the conditions present in the patient. The patient must be considered with the readings. A blood-pressure reading may be high in one individual and normal in another, that is, within reasonable limits. Older people can have a much higher pressure than younger ones, and without special significance. Very old people normally have high pressures. However, as a general rule, it may be said that a pressure of 150 mm. of mercury in a middle-aged person requires attention. In fact, most insurance companies consider people with that pressure as bad risks generally.

VACCINE IN THE TREATMENT OF WHOOPING COUGH.

Perhaps one of the most justly dreaded and serious diseases of childhood is whooping cough, not even so much for its immediate effects, although it is a disease of high mortality, but more so for its complications and sequelae, particularly tuberculosis, and debility. Until the discovery of the specific agent of this disease—the Bordet-Gengou bacillus—nothing could be done by way of prophylactic treatment, and the active treatment had to be entirely empirical and was largely unsatisfactory. In ony event, the disease is highly infectious, and isolation must be carried out rigidly, even against suspected cases, for it is they who are always the most potent factors in the spread of disease. For successful prophylaxis or satisfactory treatment of active cases early diagnosis is essential; and until diagnosis is established, the sputum and the vomitus must be particularly guarded from contact with others. Infection with whooping cough is by the so-called droplet method, and if contacts can be kept free from the patient's discharges there is no likelihood of infection. Because other catarrhal diseases often give paroxysmal coughs, a positive diagnosis can be made only from culture.

The vaccine treatment should be instituted the moment the disease is suspected. When the paroxysms are fully developed treatment is not satisfactory. Failure with the vaccine treatment of whooping cough when diagnosis is not made from cultures is often due to the fact that the paroxysmal cough is not due to the Bordet-Gengou bacillus. The influenza bacillus is particularly likely to cause it. On the other hand, there are many strains of the Bordet-Gengou bacillus, and a pure culture of one strain will be of no avail in treatment when infection is caused by another strain. The administration of pertussis vaccine is harmless, and there is no danger of producing by it any anaphylactic reactions, and so an increase of symptoms, rather than an amelioration of them. While the treatment of the disease with the vaccine during the paroxysmal stage is not as satisfactory as in the earlier stages, yet the severity of the paroxysms is much lessened and the disease much shortened. The dosage used in active or in prophylactic treatment is practically identical. In active cases it may be continued for a week or ten days—injections every other day. Usually dosage is commenced with five hundred million. Then one, two and three billions every other day in succession. The administration of the vaccine to all who are exposed will be found to reduce contact infection in a very large degree. There is no reason why with isolation and prophylactic dosage to every possibly exposed child, the disease should not eventually be reduced to a negligible number.

While ordinarily pure cultures are used in the preparation of the vaccines, some of the proprietary vaccines are polyvalent, composed of the Bordet-Gengou bacillus, the influenza bacillus, the streptococcus, the staphylococcus.

Finally, in condemning failures with the use of the vaccine in the treatment of the active cases it must not be forgotten that when the use of the vaccines is commenced late in the disease, the damage to the body or the inception of complications and sequelae have already set in, which the vaccine treatment can neither remedy nor repair.

THE FOOD VALUE OF THE BANANA.

The imperative need of food conservation, especially in food that is capable of shipment abroad, has done much to revive the subject of food values and food substitutes. It is intended to urge for home consumption food that does not demand home acreage for production, that is not so feasible for shipment abroad, but which, nevertheless, has sufficient food value to make it desirable. Of such foods the banana seems to answer the purposes very well. While an essential article of diet in the tropics, numerous objections have been raised against it as a substantial food in this country, chief among which has been its alleged indigestibility and the large quantities that would be required to make it a food staple. The value of the banana can be better understood from a consideration of its composition. Like most fruits, its main ingredient in point of quantity is water, ranging often beyond 80%. On an average, the solid content comprises about 22%, most of which is carbohydrate. The protein content is low—less than 1.5%. The fat content is about .6%, and the ash about .8%. The calories per pound are estimated at about 460, and compare very favorably with many other foods. The banana is essentially a carbohydrate food, and although it has a comparatively high caloric value it cannot take the place of the nitrogen-containing foods because its protein content is so low. It is, rather, a producer of heat and energy than a replacer of tissue, as protein foods would be. In the unripe stage, the carbohydrate is mainly in the form of starch; in the ripe stage, usually invert sugar. The sugars are both reducing and cane sugars. It seems that a greater amount of sugar, comprising glucose, sucrose and levulose, can be borne without gastro-intestinal disturbances when given as banana than in any other form.

The ash is composed mainly of base-forming salts, and is, of course, of high value to the organism. It obviates the tendency to hypoalkalinization and acidosis that the overingestion of carbohydrates is so likely to bring about. Not much has, however, been said about the vitamine content of the banana, and it would seem that, in common with other fruits and starchy foods, it is low in vitamine content.

It goes without saying that, like other fruits, the banana should be eaten only when thoroughly ripe. Any reputation that the banana has gained as an indigestible food has come from consuming the unripe fruit. The unripe banana consists of indigestible starch, whereas when ripe it is converted into very digestible sugars. Even the consumption of large quantities of the ripe banana will cause no discomfort or gastro-intestinal disturbances. Indeed, the objection to this food as a staple article of diet, even for an inconsiderable period, is that so large a quantity of it would have to be consumed to satiate. Because it is almost wholly carbohydrate, and really a one-sided and unbalanced food, it would never do to make it the main or sole article of diet. It was never intended that it should be. The banana is advocated, rather, as a very good, very digestible, and very cheap food, and with many other advantages thrown in. With a better understanding of its value, time of eating and preparation, it promises to remain a very important part of our dietary, even after the urgent needs of conservation are over.

* * *

BOSTON CITY HOSPITAL ALUMNI ASSOCIATION.

THE annual meeting of the Boston City Hospital Alumni Association was held on Thursday March 21, 1918. In the leading columns of the present issue of the JOURNAL is published a complete report of the exercises at the Hospital in the forenoon in dedication of the new memorial tablet to the late Dr. David W. Cheever, in the Surgical Amphitheatre which now bears his name. After these exercises, the usual luncheon was served in the Hospital Library.

In another column of this issue of the JOURNAL are published also the memorial resolutions adopted as a testimonial to the late Dr. John G. Blake at the evening meeting of the Alumni Association at the University Club, under the presidency of Dr. George H. Washburn. At this meeting addresses were made by the president, by Mayor Peters, and by Dr. George W. Gay. Major John J. Dowling and Dr. Edward H. Nichols spoke also in behalf of the Boston City Hospital Unit, now organized as United States Base Hospital No. 7, and in training at Camp Devens, Ayer. This unit comprises 30 surgeons and physicians, 100 women nurses, 200 male nurses, orderlies, cooks, drivers, and mechanics. It is equipped to maintain an institution of 1000 beds. Other addresses were made by Dr. Charles A. Porter, Dr. Channing Frothingham, Dr. Henry S. Rowan, and Mr. Thomas Forsyth. The following officers were elected for the ensuing year: Dr. George H. Washburn, president; Dr. H. L. Smith, Nashua, N. H., vice-president; Dr. Cadis Phipps, secretary; Dr. W. R. P. Emerson, treasurer.

* * *

CONSERVATION OF SUGAR, ALCOHOL, AND GLYCERIN.

THERE is urgent need for the country to use with the utmost care existing stocks of sugar, alcohol, and glycerin. The work of Wimmer of New York and Upsher Smith of St. Paul, Minn., has shown that it is possible to reduce largely the amount of these materials used in medicine by the adoption of infusions, decoctions, and solid forms of medication, such as capsules, in place of elixirs, syrups, fluid extracts, and tinctures. As the choice of medicine rests with physicians, the successful conservation of sugar, alcohol, and glycerin in this respect depends largely upon them; and upon the profession throughout the country should be urged the desirability of prescribing in accordance with this method wherever possible. It is also desirable that this matter should be fully discussed at medical meetings, in order that all may fully realize its importance, and may do everything in their power to assist this movement of conservation, which cannot fail to be of material assistance to the country and to the United States Food Administration..

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MEDICAL NOTES.

London Death Rates in January.—Statistics recently published show that the total death rate of London in January, 1918, was 19.4 per thousand inhabitants living. Among the several districts and boroughs, the lowest rate was 14.5 in Wandsworth, the most populous of the southern areas, and the highest was 34, in Shoreditch, an East End slum. In the absence of any important epidemic, however, this unusually high rate may probably be taken as indicating the local incidence of air raid casualties, or of deaths due to munitions explosions.

Commission for a Woman Physician.—Report from Washington, D. C., on March 19, states that Dr. Kate B. Karpels of the Emergency Dispensary of the Army Medical Department, has been appointed first lieutenant in the U. S. Army. It is said that she is the first woman physician to receive a commission of this rank in America.

Resolutions in Relation to the International Surgical Society.—It was agreed at a meeting held in Paris on November 3rd, 1917, of delegates of the International Surgical Society from Belgium, France, Great Britain, Serbia and the United States of America, that:

1. The International Surgical Society be dissolved after the publication of the Volume of Transactions of the Meeting held at New York City, April 14th, 1917. Should any money remain after the publication of the volume, such money will be divided pro rata among members. Each member of the Austro-German group will receive his share; but the money belonging to members from other nations will be retained and applied to some object of scientific reparation in Belgium.

2. A new Society will be created after the war on a similar basis, to be called the "Inter-Allied Surgical Society." Surgeons of neutral countries may also be elected members.

Dental School Opened to Women.—Report from St. Louis on March 18, states that upon the recommendation of Dr. John Kennerly, Dean of the Dental School of Washington University, this school will be opened to women, beginning with the academic year, 1918-1919.

Hospital Fire in Ottawa.—Heroic efforts of nuns and nurses saved all but one of 158 patients in the Water Street General Hospital in Ottawa, which was partially destroyed by fire on January 10.

WAR NOTES.

Mobile Operating Unit.—The Government is organizing a mobile operating unit for service in France, to consist of sixty surgeons, fifty nurses, and two hundred and fifteen enlisted men, according to an announcement by Major Fred W. Bailey, who is attached to the Surgeon-General's office at Washington.

The mobile operating section, whose members will be skilled in head, chest, and abdominal wounds, will move about as near the front line of battle as possible. Its equipment will be mounted on trucks. Under present arrangements, wounded men are sent to first-aid stations, which usually are situated near the third-line trenches. From there they are moved to evacuation hospitals, which are often located at a distance.

Five Thousand Nurses Needed before June.—A call for 5000 nurses between now and June 1 for services in military hospitals at home and abroad, has been made to the Red Cross by Surgeon-General Gorgas of the Army. Nearly 7000 nurses have already been supplied by the Red Cross, but the need for more grows imperative daily. Of the 80,000 or 90,000 registered nurses in the United States, General Gorgas estimates that approximately 30,000 will be needed for service in Army hospitals this year.

Miss Jane A. Delano, Red Cross director of nursing, today issued an appeal to the country's nurses to volunteer. She pointed out that such nurses would be eligible to participate in the Army and Navy insurance at nominal rates.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending March 23, the number of deaths reported was 280, against 272 last year, with a rate of 18.61, against 18.36 last year. There were 36 deaths under one year of age, against 33 last year.

The number of cases of principal reportable diseases were: diphtheria, 89; scarlet fever, 35; measles, 192; whooping cough, 61; typhoid fever, 1; tuberculosis, 79.

Included in the above were the following cases of non-residents: diphtheria, 22; scarlet fever, 15; measles, 3; tuberculosis, 6.

Total deaths from these diseases were: diphtheria, 3; scarlet fever, 1; measles, 2; tuberculosis, 30.

Included in the above were the following non-residents: diphtheria, 1; tuberculosis, 4.

Annual Meeting of the Instructive District Nursing Association.—At the 32nd annual meeting of the Instructive District Nursing Association, the president, Mrs. Ernest Amory Codman, made the following report:

"195,562 visits were made by our nurses in 1917 to 17,001 patients. With an increase of $13,600 in expenses, the deficit, $2000, was the lowest in four years; 257 new subscribers have been gained, and four churches have given us steady support. Since the beginning of the year, a new memorial nurse has been added to the nine which have already been given. The Red Cross automobile service has been generous in its help, and the Woman's Peace party, the first agency to contribute the whole cost of the supplies, has given thousands of surgical sponges. Volunteers have helped in many ways. A new school for public health nursing, under joint direction of Simmons College and the Association, is to be established as a result of the public health courses which have been given under the direction of Miss Anne Hervey Strong. This school will make possible in five years a college and nursing education which otherwise would take seven. We believe this is the only place where such a plan has been decided upon."

The officers of the Association were re-elected, with the exception of Mrs. Robert L. DeNormandie, who will be second vice-president, in place of Miss Emily G. Denny resigned.

Miss Anne Hervey Strong, director of the Instructive District Nursing Association-Simmons College courses in public health nursing, has been appointed a member of a committee which is to coöperate with the committee on nursing of the medical board of the Council of National Defense in working out the details of the plans connected with a course for nurses in the Vassar College nurses' training camp.

Boston Dispensary Asks $50,000.—The Boston Dispensary, a charitable corporation having no connection with the city government and in receipt of no city funds for its maintenance, was the worthy beneficiary of a brief but vigorous drive for $50,000 during the week of March 25. This institution has for 122 years been helping the sick of Boston, and has never before asked the public for funds. This campaign was the result of a deficit last year, when the institution was 50% self-supporting. The deficit was caused by the increased cost of all supplies and increased expenses, and the extra war effort for the suppression of venereal diseases, in which the dispensary is a leader.

A committee of more than forty prominent business men, physicians, clergymen, and educators, and a number of women whose names are identified with high social service, took charge of the campaign. The active canvass was under the direction of Miss Kate McMahon, with ten teams, each composed of ten women. The appeal was directed in a substantial measure toward those who have benefited from the ministrations of the Dispensary in the past, or who in the future might so benefit.

The Dispensary now treats about 35,000 men, women, and children in its out-patient clinics, and more than 6000 patients are treated in their homes by district physicians each year. About 700 babies and children are cared for in the Hospital for Children. Of the 41,000 patients, half are wage-earners.

Commissions for Massachusetts Physicians.—Report from Washington, D. C., on March 19, states that the following Massachusetts physicians have recently been appointed to the Medical Reserve Corps of the United States Army, and have accepted commissions of the ranks specified.

Captains—J. F. Fennessey, Boston; O. C. Swope, Boston.

First Lieutenants—G. C. Bergaron, Springfield; J. D. Milot, Fall River; T. W. Wickham, Boston; G. L. Curran, North Adams.

NEW ENGLAND NOTES.

Annual Report of the Butler Hospital, Providence, R. I.—The seventy-fourth annual meeting of the Corporation of the Butler Hospital of Providence, R. I., was held on January 23, 1918, and the following matters were reported. The hospital staff has been much depleted by the war. Major Arthur H. Ruggles, M.O.R.C., first assistant physician of Butler Hospital, has been placed in charge of one of the psychiatric units to be attached to the different base hospitals belonging to the Army, and has been receiving preliminary training in the Craiglockhart War Hospital, near Edinburgh. It is expected that he will soon be ordered to the front in France. The Superintendent of the hospital has been appointed by the Governor of Rhode Island a member of the Medical Advisory Board in connection with the second draft. Others of the staff are performing like valuable service.

During the year of 1917, 295 patients have received treatment at the hospital. The average admission rate for the year was $23.69, while the average weekly cost was $27.41. The expenses of operation for the year totaled $203,127.23, against $196,091.54 income. The balance was made up by the generous use of the hospital funds on the part of the Trustees. Beneficiary funds were drawn upon to the amount of $18,573.12, and the sum of $9,984.47 was received from the State of Rhode Island.

Seventeen probationers were admitted to the women's nursing service during the year, fourteen of whom were accepted. Eleven women and thirteen men completed the two years' course.

The Massachusetts Medical Society.

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Bristol South, **Edwin D. Gardner**, M.D., New Bedford.
Essex North, **T. N. Stone**, M.D., Haverhill.
Essex South, **H. P. Bennett**, M.D., Lynn.
Hampden, **Laurence D. Chapin**, M.D., Springfield.
Hampshire, **E. E. Thomas**, M.D., Northampton.
Middlesex South, **William C. Hanson**, M.D., Belmont.
Norfolk South, **Daniel B. Reardon**, M.D., Quincy.

Hampshire District Medical Society.—The regular meeting of the Hampshire District Medical Society was held at the Forbes Library, at Northampton, March 14, 1918.

Voted: That we approve of an increase in the annual dues of the Massachusetts Medical Society, if necessary, the amount to be determined by the Council.

Papers:

Dr. E. H. Copeland	Gastric Tetany
Dr. N. G. Haskell	Pyloric Spasm

Discussion.

Adjourned to Boyden's for lunch.

C. T. Cobb, *Sec. pro tem.*

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1917-1918.

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Miscellany.

ANNUAL MEETING, AMERICAN MEDICAL ASSOCIATION.

It is announced that the sixty-ninth annual meeting of the American Medical Association this year will be held in Chicago, June 10-14. The local executive committee of arrangements is made up as follows:

Ludvig Hektoen, *Chairman*
Charles J. Whalen, *Secretary*
William A. Pusey, *Treasurer*
John V. Fowler
Frank Billings
Hugh T. Patrick
James B. Herrick
Malcolm L. Harris
Chas. E. Humiston

This committee is actively engaged in perfecting plans for the comfort and entertainment of the members and their guests. All correspondence with this committee or with any of its sub-committees should be addressed to 25 East Washington Street, Chicago.

The chairman of the sub-committee on clinics, Dr. Charles F. Humiston, announces that there will be a series of clinics for the Fellows of the Association on Thursday, Friday and Saturday, June 6, 7 and 8, and on Monday and Tuesday, June 10 and 11.

These clinics will cover every phase of medicine, surgery, and the specialties, and will be conducted by leading Chicago commissions.

Alumni and section dinners will be held on Wednesday evening from 6 to 8 o'clock so as not to conflict with other events which are being planned. The chairman of the sub-committee on alumni and section entertainment, Dr. J. H. Stowell, announces that his committee is coöperating with officers of alumni associations in arranging for reunions. The committee desires, also, to assist the officers of those sections which desire to arrange for section dinners.

The following hotels have been tentatively designated as general and section headquarters for the Chicago Session, June 10 to 14:

General Headquarters: Hotel Sherman, North Clark and West Randolph.

Practice of Medicine: Hotel Morrison, 83 West Madison.

Surgery, General and Abdominal: Auditorium Hotel, 430 South Michigan.

Obstetrics, Gynecology and Abdominal Surgery: Congress Hotel, South Michigan and Congress.

Ophthalmology: Hotel LaSalle, LaSalle and West Madison.

Laryngology, Otology and Rhinology: Hotel LaSalle, Lasalle and West Madison.

Diseases of Children: Congress Hotel, South Michigan and Congress.

Pharmacology and Therapeutics: Auditorium Hotel, 430 South Michigan.

Pathology and Physiology: Auditorium Hotel, 430 South Michigan.

Stomatology: Congress Hotel, South Michigan and Congress.

Nervous and Mental Diseases: Blackstone Hotel, South Michigan and East Seventh.

Dermatology: Blackstone Hotel, South Michigan and East Seventh.

Preventive Medicine and Public Health: Auditorium Hotel, 430 South Michigan.

Genito-Urinary Diseases: Auditorium Hotel, 430 South Michigan.

Orthopedic Surgery: Congress Hotel, South Michigan and Congress.

Gastro-Enterology and Proctology: Auditorium Hotel, 430 South Michigan.

Scientific Exhibit, Registration Bureau, Commercial Exhibit, Information Bureau, and Branch Postoffice: Hotel Sherman, North Clark and West Randolph.

RESOLUTIONS IN MEMORY OF DR. BLAKE.

The following testimonial to the memory of Dr. John G. Blake was presented at the annual dinner of the Boston City Hospital Alumni Association at the University Club on the evening of March 21, 1918.

Dr. John G. Blake's connection with the Boston City Hospital covers its history from its opening almost to the present day. Now it has become a part of the history which he helped to make.

Appointed in 1864, his name has been borne continuously on its roster, at first as the Junior

Visiting Physician, later as Visiting Gynecologist and since 1900 as Senior Physician. In each capacity he gave faithful and unstinting service. His interest in the institution, which had become an integral part of his life, never flagged. He was a constant attendant at the meetings of the staff of which he was long Vice-President. He had the imagination to grasp the possibilities of the municipal hospital service to the community, not only in the care of the sick poor, but as a center of medical education, and by his advice and votes worked consistently to widen the scope of its activities. He saw clearly the necessity for keeping it from political affiliations and successfully cast the weight of his influence to keep it free. He was a valued member of many of the important committees of the staff. His sympathy with young men, his optimism and his kindliness, which never impaired his sense of justice, assured his success as chairman of the Committee on Discipline.

As a medical teacher he was justly popular, clear, concise, and practical; he inculcated common sense, and while impressing the necessity for accurate diagnosis he never forgot the interests of the patient in his interest in the disease. As a practitioner of medicine he was eminently successful.

Patients recognized in him that indefinable quality called character, and sought him as a wise physician, a trusted counsellor, a devoted friend.

As a member of this association Dr. Blake shone with unrivalled luster. We all moved within the circumference of his orbit. He was an essential part of our meetings, and unavoidable circumstances alone prevented his attendance. He frequently appeared on the official list of speakers, but official omission often failed to save him from the popular demand to hear his voice; without it the occasion was incomplete. His charm, his wit, his vivid personality and his perpetual youth won our hearts, and we mourn the loss of our best loved member.

He met death as he met life, hopefully and courageously, with the mind of a man and the heart of a child.

We send to his family our high appreciation of his character and our heartfelt sympathy in their sorrow.

George G. Sears, M.D.
George W. Gay, M.D.
W. H. Prescott, M.D.
Committee.

SOCIETY NOTICES.

Boston Dispensary.—On April 9, 1918, at 8.15 p.m., the staff of the Boston Dispensary will hold its quarterly meeting at the above time. A program dealing with venereal diseases has been arranged with the State Commissioner of Health, Dr. Eugene R. Kelley, in charge. There will be four or five speakers representing various phases of the problem. Those of the medical profession who are interested in this subject are invited to attend. Hilbert F. Day,
Secretary of the Staff,
Boston Dispensary.

New England Pediatric Society.—The fifty-third meeting of the New England Pediatric Society will be held at the Boston Medical Library, on Friday, April 12, 1918, at 8.15 p.m.

The following papers will be read:

1. An Unusual Food-borne (Probably Milk) Epidemic of Scarlet Fever.
   Edwin H. Place, M.D., Boston
   H. Linenthal, M.D., Boston
   A. B. Lyon, M.D., Boston
   M. C. Cheney, M.D., Boston.
2. An Analysis of the Wassermann Reactions Done at the Boston Lying-in Hospital for the Years 1916-1917. John B. Swift, M.D., Boston.
3. Auto-serum Treatment of Chorea.
   P. H. Sylvester, M.D., Boston.

Light refreshments will be served after the meeting.

Charles Hunter Dunn, M.D., *President,*
Richard M. Smith, M.D., *Secretary.*

Suffolk District Medical Society.—The annual meeting will be held on Wednesday, April 24, 1918, at the Boston Medical Library, at 8.15 p.m.

Business meeting: Reports of officers and committees, election of officers, incidental business.

The paper of the evening will be by Dr. Eugene Kelley, State Commissioner of Health, on "The State Venereal Disease Program."

Guests will be welcome at the second part of the meeting, which will begin at about 8.45 p.m.

Gilbert Smith, *Secretary.*

CENSORS' EXAMINATION.

The Censors of the Suffolk District Medical Society will meet to examine candidates for admission to The Massachusetts Medical Society, at 8 The Fenway, on Thursday, May 2, 1918, at 4 p.m.

Candidates, who must be residents of the Suffolk District or non-residents of Massachusetts, should make personal application to the Secretary and *present their medical diplomas*, at least one week before the examination.

For further particulars, apply from 2 to 5 p.m. to

Gilbert Smith, *Secretary.*
99 Commonwealth Avenue.

NOTICE.

The Boston Medical Library is desirous of having a copy of the circular which was sent out to the profession in Boston in 1875 calling for a meeting to consider the formation of a Medical Library. Any one willing to send a copy to the Library, No. 8 The Fenway, will receive the thanks of

Yours very truly,
John W. Farlow, *Librarian.*

RECENT DEATHS.

George H. Shedd, M.D. died recently at North Conway, N. H. He was head of the Memorial Hospital in that town, and had been a practising physician there for twenty years. For eleven years he practised medicine in Bartlett and Fryeburg, Me.

THE BOSTON
Medical and Surgical
JOURNAL

OFFICIAL ORGAN OF THE MASSACHUSETTS MEDICAL SOCIETY AND OF THE NEW ENGLAND SURGICAL SOCIETY

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OF THE

OFFICERS AND FELLOWS

Alphabetical and Local Lists

Prepared by the Librarian

Massachusetts Medical Society
8 The Fenway
Boston, Massachusetts

SUPPLEMENTARY

INFORMATION RECEIVED SINCE FINAL REVISION.

Averill, Jesse Howes, retired, 1918.
Bailey, Walter Channing, Washington, D. C., 1767 Q St.
Battershall, Joseph Ward, retired, 1918.
Blake, Francis Gilman, resigned, Feb. 6, 1918.
Blake, John George, died, March 4, 1918.
Bradley, Charles Seymour, died, Feb. 19, 1918.
Brickley, William Joseph (restored) Boston, 486 Commonwealth Av.
Brown, Herbert Rutherford, resigned, Feb. 6, 1918.
Bryant, William Sohier, resigned, Feb. 6, 1918.
Cobb, Gardner Nathan, Hingham, U. S. N. T. C.
Copeland, Horatio Franklin, died, Feb. 8, 1918.
Cornforth, Herbert Huskisson, resigned, Feb. 6, 1918.
Cutts, Harry Madison, died, Feb. 21, 1918.
Dennett, Paul Carroll, Allston, 74 Harvard Av.
Emerson, Ernest Benjamin, Rutland, State Sanatorium.
Ermantrout, Sallie Justina, died, Nov. 14, 1917.
Farr, Edwin Lawson, died, Jan. 24, 1918.
Ferguson, Edward Hugh, Dorchester, 60 Charles St.
Fraim, Irving William, Macon, Ga., 208 Second St.
Freeman, Franklin Willard, Lynnfield Center.
Goddu, Louis Adalore Oliver, transferred from Norfolk to Suffolk.
Gordon, John Alexander, died, Jan. 25, 1918.
Grant, Winifred Margaret, Worcester, 37 Pearl St.
Greenough, Robert Battey, transferred from Norfolk to Suffolk.
Haley, William Thomas, Salem, 345 Essex St.
Hamilton, Annie Lee, Roxbury, 164 Longwood Ave.
Harris, William De Blois, Lynn, 98 South Common St.
Hassman, David Morris, Brookline, 59 Longwood Av.
Hendricks, Henning Vitalis, resigned, Feb. 6, 1918.
Hipkiss, George, Noroton Heights, Conn., Soldiers' Home.
Honeij, James Albert, New Haven, Conn., 320 Cedar St.
Jackson, William Benjamin, Lowell, 229 Stevens St.
Kelley, Eugene Robert, Brookline, 41 Egremont Road.
Lathrop, William Henry, died, Dec. 22, 1917.
Lawrence, Nellie Louise, resigned, Feb. 6, 1918.
Mahoney, Daniel Francis, Boston, 522 Commonwealth Av.
Marr, Edward Loring, Melrose, 315 Main St.
Martin, John Macleod, died, Feb. 19, 1918.
Marvin, Frank William, Cambridge, 1775 Massachusetts Av.
Millett, John Alfred Parsons, resigned, Feb. 6, 1918.
Miniter, Francis Gabriel, Allston; office, Boston, 419 Boylston St.
Newton, William Curtis, Revere, 270 Broadway.
Parvey, Benjamin, Dorchester, 24 Charlotte St.
Pickard, Isaiah Lovell, resigned, Feb. 6, 1918.
Reggio, André William, Boston, 286 Beacon St.
Robertson, Jessie Wilhelmine, Cambridge, 2261 Massachusetts Av.
Sawin, Charles Dexter, died, Feb. 8, 1918.
Shanahan, John, retired, 1918.
Skinner, Edward Manning, died, Feb. 8, 1918.
Smith, Samuel Finley, retired, 1918.
Sundelöff, Ester Mathilda Eleonora, Fall River, 151 Rock St.
Teck, Martin William, Marblehead, Devereux Mansion.
Torrey, Samuel William, died, Jan. 1, 1918.
Whitney, Edward William.
Whitney, Harriet Wiley, Northampton, State Hospital.

CORRECTIONS.

Goss, Francis Webster, Sacramento, Calif., 1034 40th St.
MacKinnon, Donald Lauchlin, Truro, N. S., Prince St.
1901 MacLennan, Angus Daniel.
Mansfield, Burton Burleigh, Union, N. H.
Overholser, Winifred, Wellesley Hills.
Williams, Charles Herbert, Cambridge; office, Boston, 1069 Boylston St.

Massachusetts Medical Society

ALPHABETICAL DIRECTORY

OF THE

OFFICERS AND FELLOWS

WITH

DATE OF ADMISSION, RESIDENCE
AND OFFICE ADDRESS

JANUARY 1, 1918

OFFICERS OF THE SOCIETY

1917-1918

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VICE-PRESIDENT

GEORGE P. TWITCHELL . . 17½ Federal St., Greenfield.

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WALTER L. BURRAGE . . . . 282 Newbury St., Boston.

TREASURER

ARTHUR K. STONE . . Auburn St., Framingham Center.

LIBRARIAN

EDWIN H. BRIGHAM, Brookline, office 8 The Fenway, Boston.

HONORARY FELLOW

1892 Goodale, George Lincoln, 5 Berkeley St., Cambridge, Mass.

ACTIVE AND RETIRED FELLOWS

JANUARY 1, 1918.

Note.—The date preceding the name is that of admission. A date following, preceded by a †, denotes year of retirement. The first name of city or town is the legal residence; the street and number are the office address.

A letter in place of a given first name not followed by a period is not an initial. It is a letter adopted by the individual instead of a name to distinguish him or her from others, or for the sake of euphony.

The last known address is given in this list. Many of the Fellows are, at present, in the U. S. Army and Navy, but have made no official report to the Librarian.

A

1917 Aaronson, Jacob..........Chelsea. 69 Congress Ave.
1884 Abbe, Alanson Joseph......Fall River. 375 Rock St.
1910 Abbe, Elizabeth Morrison..Roxbury (Boston). 45 Dale St.
1895 Abbe, Frederick Randolph..Dorchester (Boston). 15 Sayward St.
1892 Abbot, Edward Stanley....Waverley (Belmont). McLean Hospital.
1903 Abbot, Florence Hale......State Hospital. Mattapan (Boston).
1911 Abbott, Charles Edward...Andover. 70 Main St.
1913 Abbott, Charles Roger.....Clinton. 123 High St.
1894 Abbott, Howard Edwin....Lynn. 54 Park St.
1891 Achorn, John Warren......Pine Bluff, N. C.
1911 Achorn, Ralph Chase......Boston. 25 Huntington Av.
1916 Adamian, Hovsep Garo...Lawrence. 260 Haverhill St.
1909 Adamian, Parnag Adam....Worcester. 55 Laurel St.
1911 Adams, Charles Baker.....Springfield. 431 Main St.
1894 Adams, Charles Sumner...Wollaston (Quincy). 62 Brooks St.
1906 Adams, Charles Waldron...Cambridge. 322 Broadway.
1880 Adams, George Edwin.....Worcester. 974 Main St.
1884 Adams, Herbert William...Dorchester (Boston). 744 Dudley St.
1898 Adams, John..............Roxbury (Boston). 1637 Tremont St.
1903 Adams, John Dresser......Brookline. Office, Boston. 45 Bay State Rd.
1910 Adams, Letitia Douglas....Boston. 175 Dartmouth St.
1891 Adams, Walter Henry......Northampton. 34 Bridge St.
1899 Adams, William Carlton...East Taunton (Taunton). 414 Middleboro Av.
1904 Adams, Zabdiel Boylston...Brookline. Office, Boston. 166 Newbury St.
1912 Addelson, Nathan..........Roxbury (Boston). 548 Warren St.
1907 Adler, Herman Morris.....Chicago, Ill. Juvenile Court. County Bldg.
1910 Adriance, Vanderpoel......Williamstown. Main St.
1867 Ahearne, Cornelius Augustus †1906 Lynn. 21 Church St.
1891 Ahearne, Cornelius Augustus, Jr. Salem. 83 Essex St.
1915 Ahlstrom, Hjalmar........Quincy. 119 Garfield St.
1917 Aimone, Victor Anthony..Winchester. 454 Main St.
1894 Albee, George Macdonald...Worcester. 1159 Main St.
1915 Albee, Kenneth Field.....Weston. Central Av.
1915 Alcuzar, Izak.............Boston. 510 Commonwealth Av.
1903 Alexander, Thomas Branch Scituate Harbor (Scituate). Central St.
1900 Alfred, James.............Brockton 591 North Main St.
1913 Allard, Carlton Eugene....Dorchester. Office, Boston, 77 Kilby St.
1913 Allen, Arnold Noble.......Roslindale (Boston). 22 Conway St.
1916 Allen, Arthur Wilburn.....Boston. 657 Boylston St.
1884 } 1906 } Allen, Bradford...........Nashua, N. H. 9 Main St.
1892 Allen, Carl Addison †1917 Holyoke. 16 Fairfield Av.
1899 Allen, Clarence Jean.......Winchester. 38 Church St.
1909 Allen, Fred Harold........Holyoke. 644 Dwight St.
1901 Allen, Freeman............Boston. 200 Beacon St.
1885 Allen, Gardner Weld.......Boston. 419 Boylston St.
1903 Allen, Granville Stevens....Lawrence. 3 State St.
1901 Allen, Horatio Cushing....New Bedford. 11 Eighth St.
1898 Allen, Seabury Wells......York Harbor, Me. Office, Boston. 509 Beacon St.
1903 Allen, William Howard....Mansfield. 70 N. Main St.
1916 Alley, Ernest Jason........Billerica. Concord Road.
1916 Alley, Leon Arthur........Brockton. 12 Richmond St.
1911 Alling, Marshall Louis.....Lowell. 9 Central St.
1914 Allison, Carl Edwin........Somerville. 241 Elm St.
1911 Almy, Thomas.............Fall River. 140 Rock St.
1893 Amadon, Arthur Frank....Boston. 543 Boylston St.
1890 Ames, John Lincoln........Boston. 87 Chestnut St.
1915 Anderson, Victor Vance....Jamaica Plain (Boston). 64 Southbourne Rd.
1914 Andrews, Benjamin Franklin Worcester. 28 Pleasant St.
1897 Andrews, Edward Austin..Newton Center (Newton). 14 Institution Av.
1907 Andrews, Frederick Francis.Revere. 94 Beach St.
1899 Andrews, Harold Virgil....Boston. 1083 Boylston St.
1915 Andrews, Oren............Gardner. 7 East Broadway.
1904 Andrews, Robert Eaton....Cambridge. 4 Brattle St.
1888 Anthony, Francis Wayland.Bradford (Haverhill). Office, Haverhill. 50 Merrimack St.
1910 Anthony, George Chenery..Wellesley. Denton Road—West.
1898 Anthony, Jeremiah Christopher Springfield. 150 Chestnut St.
1874 Appleton, William.........Boston. 74 Beacon St.
1915 Arey, Harold Carleton.....Worcester. State Hospital.
1915 Arey, Jennie McIntosh....Worcester. State Hospital.
1906 Arkin, Louis...............Boston. 366 Commonwealth Av.
1916 Armitage, Henry George...Haverhill. 119 Emerson St.
1917 Armstrong, Donald Budd..Framingham. Edmunds St.
1891 Arnold, Horace David......Boston. 520 Commonwealth Av.
1916 Aronson, Charles..........Salem. 31 Charter St.
1905 Ascher, Joseph.............Roxbury (Boston). Office, Boston. 344 Hanover St.
1895 Ash, John Henry..........West Quincy (Quincy). 239 Copeland St.
1908 Atchison, Charles Moran...New Bedford. 94 Fourth St.
1894 Atkinson, Lizzie Daniel Rose West Newton (Newton). 1720 Washington St.
1905 Atwater, James Billings....Westfield. 108 Elm St.
1904 Atwood, Abel Wilson......Worcester. 744 Main St.
1915 Atwood, Blanche Louise...Roxbury. Office, Boston. 175 Dartmouth St.
1883 Atwood, Charles Augustus.Taunton. 15 West Britannia St.
1900 Atwood, Charles Fenner....Arlington. 821 Mass. Av.
1881 Atwood, Frank Sumner....Salem. 125 Federal St.
1892 Atwood, George Manley....Bradford (Haverhill). 127 Main St.
1894 Auger, Louis Lemaitre......Worcester. 104 Franklin St.
1891 August, Albert.............Cambridge. 51 Brattle St.
1887 } 1912 } Austin, Arthur Everett....Boston. 110 Marlboro' St.
1915 Austin, James Cornelius Spencer. 176 Main St.
1917 Avedisyan, Avadis Der....Roxbury (Boston). 26 Savin St.
1903 Averell, Charles Wilson....North Reading.
1896 Averill, George Goodwin...Waterville, Me. 47 Redington, St.
1882 Averill, Jesse Howes......Campello (Brockton). 1148 Main St.
1910 Ayer, James Bourne.......Boston. 518 Beacon St.
1884 Ayer, Silas Hibbard.......Boston. 318 Shawmut Av.
1896 Ayer, Thomas Herbert.....Westborough. 50 West Main St.
1914 Ayers, Charles Eaton......Worcester. 311 Main St.
1914 Ayres, Harold Winslow....West Somerville (Somerville). 403 Highland Av.
1917 Azadian, David George....Boston. 594 Tremont St.

B

1878 Bacon, Jonas Edward......Brockton. 101 Main St.
1900 Bacon, Newton Samuel.....Cambridge. 1688 Mass. Av.
1899 Bacon, Theodore Spaulding.Springfield. 67 Maple St.
1899 Badger, George Sherwin Clarke Boston. 48 Hereford St.
1903 Baff, Max................ Worcester 141 East Central St.
1913 Bagg, Edward Parsons, Jr..Holyoke. 243 Linden St.
1915 Bagnall, Elmer Stanley.... Groveland. 9 School St.
1904 Bail, John Warren.........Brookline. 1677 Beacon St.
1881 Bailey, Charles Hardy.....Gardner 39 East Broadway.
1905 Bailey, Frederick James...Dorchester (Boston). 40 Hancock St.
1893 Bailey, George Guy........Ipswich. 49 Central St.
1894 Bailey, Marshall Henry...Cambridge. 1569 Mass. Av.
1898 Bailey, Walter Channing...Boston. 506 Beacon St.
1906 Bain, John Baxter.........Lawrence. 348 Haverhill St.
1910 Baker, Chester Stoyle.....Lowell. 40 Middlesex St.
1883 Baker, David Erastus......Newtonville (Newton). 227 Walnut St.
1914 Baker, Donald Vinton..... Boston. 1924 Beacon St.
1892 Baker, Frederick Herbert..Worcester. 4 Linden St.
1914 Baker, Harold Woods......Boston. 49 Gloucester St.
1882 Baker, Harry Beecher.....Dighton. Office, Taunton. 59 Main St.
1910 Baker, Leonard Allen......State Farm (Bridgewater).
1899 Baker, Lewis Forrester....Fitchburg. 454 Main St.
1917 Baker, Harold Nicholas...Pigeon Cove, (Rockport). 3 Phillips Av.
1903 Baketel, Roy Vincent......Methuen. 7 Hampshire St.
1906 Balboni, Gerardo Monari...Boston. 9 Prince St.
1891 Balch, Franklin Greene....Boston. 279 Clarendon St.
1892 Balcom, George Franklin †1911 Swanzey, N. H. 39 Main St.
1911 Balcom, Kenneth Ira......Worcester 112 Lincoln St.
1914 Baldwin, Edith Elizabeth..Springfield. 50 Buckingham St.
1888 Baldwin, Frederick William Danvers. 25 Conant St.
1895 Baldwin, Herman Trost....Chestnut Hill (Newton). 96 Middlesex Rd.
1896 Baldwin, Sanford Oscar....Framingham. 11 Union Av.
1912 Ball, Arthur Nelson.......Northampton. State Hospital.
1907 Ballou, Ambrose Roche....Dorchester (Boston). 327 Neponset Av.
1901 Balmer, William Edward..Whitinsville (Northbridge). Cottage St.
1886 Bancroft, Edward Erastus.Wellesley. 604 Washington St.
1891 Bancroft, George Andrew..Natick. 33 West Central St.
1877 Bancroft, Winfred Baxter..South Boston (Boston). 597 Broadway.
1898 Bangs, Charles Howard... Swampscott. Office, Boston. 149 Tremont St.
1916 Bannerman, Walter Bruce East Bridgewater (Bridgewater). 37 Bedford St.
1906 Bannon, John Hugh.......Lawrence. 457 Essex St.
1905 Bardwell, Frederick A..... Boston. 483 Beacon St.
1908 Barker, Williston Wright..Dorchester (Boston). 25 Lyndhurst St.
1892 Barnes, Francis John......Cambridge. 67 Brattle St.
1899 Barnes, Harry Aldrich.....Brookline. Office, Boston. 205 Beacon St.
1872 Barnes, Henry Jabez †1913 Northborough. Office, Boston. 429 Beacon St.
1900 Barnes, James Arthur......Worcester. 390 Main St.
1906 Barnes, William Lester....Lexington. 365 Mass. Av.
1917 Barnes, Frederick Rigby..Fall River. 151 Rock St.
1917 Barnes, Louis Dwight.....Lanesborough.
1905 Barney, James Dellinger...Boston. 99 Commonwealth Av.
1914 Barney, Willis Oliver......Boston. 483 Beacon St.
1910 Barnum, Francis Goodell...Boston. 481 Beacon St.
1913 Barone, Joseph............Boston. 282 Hanover St.
1895 Barré, Joseph Aladin......Fall River. 1555 Pleasant St.
1900 Barrell, Charles Sewall....Boston. 425 Beacon St.
1899 Barrell, Mary Elizabeth...Worcester. 904 Main St.
1907 Barrett, Edward William..Medford. 34 Washington St.
1904 Barrett, Michael Francis...Brockton. 231 Main St.
1906 Barron, Elmer Walter.....Malden. Office, Boston. 520 Commonwealth Av.
1916 Barron, Maurice Edward..Boston. 366 Commonwealth Av.
1901 Barry, Emmett William....Whitinsville (Northbridge).
1908 Barry, James Henry.......Roxbury (Boston). 2990 Washington St.
1906 Barstow, Andrew Thaddeus.Boston. 27½ Mass. Av.
1899 Bartlett, Charles Watson...Marshfield. Main St.
1909 Bartlett, Fred Ai..........Atlantic (Quincy). 62 Billings Rd.
1895 Bartlett, Oliver Leslie.....Pittsfield. 73 North St.
1902 Bartlett, Philip Challis....Newton Highlands (Newton). Office, Boston. 583 Beacon St.
1905 Bartlett, Walter Oscar.....Roxbury (Boston). Office, Boston. 390 Commonwealth Av.
1903 Bartley, John Joseph......Lawrence. 334 Haverhill St.
1906 Bartol, Edward Francis Washburn Milton. 6 Reedsdale Rd.
1890 Bartol, John Washburn....Boston. 3 Chestnut St.
1871 Barton, Chester Manley †1906 Hatfield.
1900 Barton, John Alfred.......Fitchburg. 43 Summer St.
1917 Bass, Harris ....Everett. 342 Broadway.
1869 Bassett, Elton James†1910 Taunton. 11 Cedar St.
1917 Bassow, George Joseph....Athol. 503 Main St.
1911 Batchelder, Hollis Goodell.Dedham. Office, Boston. 520 Beacon St.
1897 Batchelder, William Burdett Dorchester (Boston). 163 Washington St.
1895 Bateman, Frank Eliot......Somerville. 163 Highland Av.
1915 Bates, Charles Atwood.....Ashburnham.
1889 Bates, Everett Alanson.....Springfield. 57 Chestnut St.
1907 Bates, Lewis Beals........Ancon, Canal Zone, Panama, Ancon Hospital.
1897 Bates, Walter Simpson.....Barre. South St.
1916 Battershall, Jesse Wolfenden Attleborough 18 North Main St.
1879 Battershall, Joseph Ward..Attleborough. 18 North Main St.
1911 Battershall, Mary Hannah Wolfenden Attleborough. 18 North Main St.
1912 Bauer, Louis Hopewell.....U. S. Army.
1912 Baum, Ewald George......Natick. Office, Boston. 2 Park Sq.
1913 Bauman, Julia Lewandowska Holyoke. 97 High St.
1884 Baxter, Edward Hooker....Hyde Park (Boston). 19 Webster St.
1903 Beal, Howard Walter......Worcester. 452 Main St.
1913 Beale, Samuel Marsden, Jr..Sandwich.
1897 Beals, Arthur Loring......Brockton. 106 Main St.
1912 Bean, Charles Franklin Kingsbury West Medford (Medford). 51 Harvard Av.
1896 Bean, Charles Pierce.......Boston. 426 Mass. Av.
1917 Bearse, Carl ....Boston. 24 McLean St.
1906 Beauchamp, Joseph Octave.Chicopee Falls (Chicopee). Office, Springfield. 310 State St.
1917 Beaudet, Elphege Aleine...Lowell. 268 West 6th St.
1908 Beaulieu, Elmer Joseph....Whitman. Washington St.
1906 Beaulieu, Francis Xavier...Taunton. 357 Bay St.
1899 Beckley, Chester Charles...Lancaster.
1890 Bedard, Joseph Armand....Lynn. 26 Ocean St.
1901 Beebe, Theodore Chapin....Boston. 61 Mt. Vernon St.
1901 Beebe, M. Josephine.......Roslindale (Boston). 10 Conway St.
1907 Beeley, Leon Gage.........Lawrence. 145 Haverhill St.
1914 Behrman, Roland Augustus.Roslindale (Boston). 147 Belgrade Av.
1914 Bell, Clarence John........Wellfleet.
1914 Bell, Conrad...............Waltham, 820 Main St.
1914 Bell, Richard Dana........Somerville. 26 Bow St.

1906 Bellehumeur, David Stanislaus Lowell. 813 Merrimack St.
1875 Benner, Burnham Roswell. Lowell. 62 Sixth St.
1898 Benner, Herbert Orray.....Framingham. 36 Union Av.
1903 Benner, Richard Stanwood. Springfield. 25 Maple St.
1906 Bennett, Hamlin Perley....Lynn. 41 Lewis St.
1902 Bennett, William Hurlburt Hyde Park (Boston). 1349 River St.
1898 Benson, Charles Sweetser..Haverhill. 50 Merrimack St.
1898 Berg, Tekla Amalia Josefina Lynn. 1 Atlantic St.
1903 Bergin, Stephen Albert.....Worcester. 33 Portland St.
1916 Berlin, Maurice George....Dorchester (Boston). 3 Esmond St.
1916 Berman, Myer Isadore.....Dorchester (Boston). 1063 Blue Hill Av.
1889 Bernard, Barnard Lecherzack South Boston (Boston). 195 Dorchester St.
1916 Berr, Alfred William......Lawrence. Lawrence Gen. Hosp.
1914 Berry, Charles Francis.....Boston. 541 Commonwealth Av.
1908 Berry, Gordon.............Worcester. } 19 Elm St.
1896 Berry, John Cutting †1912 Worcester. }
1890 Berry, Lauriston M †1908 Junction, Wyoming.
1917 Berry, Walter Durant. Braintree. 447 Washington St.
1909 Berry, William Christopher. Jamaica Plain (Boston). Office, Boston, 419 Boylston St.
1901 } 1914 } Bertrand, Alexis Everiste. Lowell. 10 East Merrimack St.
1908 Besse, Frank Adelbert.....Orleans. Main St.
1907 Bessey, Earle Emerson.....Waban (Brookline). Office, Boston. 845 Beacon St.
1883 Best, Enoch George........Greenfield. 473 Main St.
1901 Bicknell, Ralph Emerson...Swampscott. 148 Burrill St.
1909 Bieberbach, Walter Daniels. Worcester. 31 Pleasant St.
1907 Bier, Max Daniel..........Lawrence. 50 Concord St.
1906 Bigelow, Alice Houghton...Jamaica Plain (Boston). 14 Warren Sq.
1882 Bigelow, Charles Edwin....Leominster. 2 Park St.
1905 Bigelow, Edward Bridge...Worcester. 61 Pearl St.
1883 Bigelow, Enos Hoyt.......Framingham Center. (Framingham). P. O. Box 213.
1913 Bigelow, James Bernard...Holyoke. 61 Pearl St.
1874 Bigelow, William Sturgis..Boston. 56 Beacon St.
1904 Binford, Ferdinand Augustus Hyannis (Barnstable). Main St.
1903 Binney, Horace............Boston. 205 Beacon St.
1894 Birge, Ella Freeman.......Provincetown.
1883 Birge, William Spafard....Provincetown. Pearl St.
1885 Birmingham, Robert Michael Lawrence. 170 Salem St.
1909 Birnie, John Mathews.....Springfield. 6 Chestnut St.
1917 } 1897 } Biron, Joseph Frederick Rudolphe { Amesbury. 182 Main St.
1914 Bisbee, Ernest Sydney......Boston. 777 Tremont St.
1878 Bixby, Josiah Peet.........Woburn. 55 Elm St.
1910 Bixby, Oliver Edward......Lynn. 189 Lewis St.
1901 Blaine, Walter Edward.....Mattapoisett. 72 Main St.
1900 Blair, George Kenniston...Salem. 311 Essex St.
1897 Blair, Orland Rossini......Springfield. 580 State St.
1904 Blair, Orrin Curtis........Lynn. 79 N. Common St.
1882 Blaisdell, George Warren..Manchester. 21 Union St.
1913 Blaisdell, John Harper.....Lynn. Office, Boston. 45 Bay State Road.
1904 Blake, Allen Hanson.......West Somerville (Somerville). 117 Elm St.
1868 Blake, Clarence John......Boston. 226 Marlboro' St.
1915 Blake, Francis Gilman.....Minneapolis, Minn. University Minn., Med. Dept.
1906 Blake, Gerald.............Boston. 212 Beacon St.
1888 Blake, Harrison Gray......Woburn. 512 Main St.
1890 Blake, John Bapst.........Boston. 657 Boylston St.
1861 Blake, John George........Boston. 212 Beacon St.
1901 Blake, Le Grande..........Riverside, R. I. 317 Bullock Point Av.
1898 Blakely, David Newton....Brookline. Office, Boston. 87 Milk St.
1882 Blanchard, Benjamin Seaver Brookline. 432 Washington St.
1913 Blanchard, Paul Drake....Lowell. 226 Merrimack St.
1902 Blanchard, Randall Howard Pittsfield. 7 North St.
1912 Blanchette, William Henry..Fall River. 142 Brightman St.
1904 Blenkhorn, James..........Stoneham. 301 Main St.
1910 Bliss, George Danforth.....Dorchester (Boston). 508 Washington St.
1905 Bliss, George Stephen......Fort Wayne, Ind. Ind. Sch. Feeble-Minded Youth.
1897 Bliss, Jesse Leonti.........Holyoke. 231 High St. †1911
1871 Blodgett, Albert Novatus †1913 Boston. 51 Mass. Av.
1898 Blodgett, John Hammond..Boston. 390 Commonwealth Av.
1912 Blodgett, Stephen Haskell..South Lincoln (Lincoln). Office, Boston. 419 Boylston St.
1908 Blood, George Willard.....Fall River. 723 Middle St.
1868 Boardman, William Elbridge †1909 Boston. 388 Marlboro' St.
1906 Boardman, William Parsons. Boston. 388 Marlboro' St.
1885 Boardman, William Sidney..Boston. 63 Mt. Vernon St.
1916 Bober, Bessie Angela......Northampton. State Hospital.
1912 Bodwell, William Mortimer. Framingham. 2 Lexington St.
1915 Boehm, Julius Benjamin.. Brooklyn, N. Y. Greenpoint Hospital.
1910 Bogan, Frederick Leon.....Dorchester (Boston). Office, Boston. 514 Commonwealth Av.
1878 Boland, Elisha Shepard....South Boston (Boston). 809 Broadway.
1912 Boland, Lawrence Francis. Welch, W. Va. Miners' Hospital, No. 1.
1916 Bolduc, Alfred George.....Attleborough. 11 Union St.
1891 Bolton, Charles James.....Somerville. 26 Chauncy St.
1891 Bond, Sarah Adams........Jamaica Plain (Boston). Office, Boston. 41 Fairfield St.
1904 Bond, Walter Legrand.....West Somerville (Somerville). 322 Highland Av.
1889 Bond, Willis George.......Revere. 76 Beach St.
1915 Bone, Herman David......Gardner. 3 Cross St.
1903 Bonnar, James Miller......New Bedford. 186 Pleasant St.
1914 Bonelli, Raymond Peter....Boston. 276 Hanover St.
1911 Bonneville, Alfred Joseph..Hatfield. 43 Main St.
1901 Bonney, Charles Austin, Jr..New Bedford. 67 Bedford St.
1903 Bonney, Robert............East Boston (Boston). 7 Princeton St.
1897 Boom, Augustus Keeper....Adams. 51 Park St.
1877 Booth, Edward Chauncey †1915 Somerville. 40 Boston St.
1907 Boothby, Walter Meredith..Rochester, Minn. Mayo Clinic.
1902 Borden, Charles Richardson Cobb Brookline. Office, Boston. 520 Commonwealth Av.
1906 Borden, George Edward....Adamsville, R. I.
1893 Bossidy, John Collins......Boston. 419 Boylston St.
1911 Bostick, Warren John......West Springfield. 376 Main St.
1897 Bottomley, John Taylor....Boston. 165 Beacon St.
1897 Boucher, George Alphonse..Brockton. 20 Clinton Av.
1905 Boutwell, Horace Keith.....Brookline. 39 St. Paul St.
1913 Bouvier, Charles William..Holyoke. 251 Maple St.
1912 Bowditch, Harold.........Boston. 520 Commonwealth Av.
1903 Bowditch, Henry Ingersoll. Boston. 86 Bay State Road.
1881 Bowditch, Vincent Yardley. Boston. 506 Beacon St.
1915 Bowen, Alfred Preston.....Lynn. 17 Fayette St.
1913 Bowen, Enos Emanuel.....East Boston. 290 Sumner St.

1912 Bowen, James Francis.....Amherst. 6 Maple Av.
1887 Bowen, John Templeton....Boston. 14 Marlboro' St.
1867 Bowen, Seabury Warren †1905 Fall River. 217 Second St.
1912 Bowers, George Francis Haskell Worcester. 574 Main St.
1879 Bowers, Walter Prentice...Clinton. 264 Chestnut St.
1891 Bowker, Everett M.........Brookline. 322 Harvard St.
1894 Bowles, George Hall........Plymouth, N. H. 2 Russell St.
1892 Bowman, Fred Raymond...Boston. 211 Huntington Av.
1914 Boyd, Francis Peter.......Springfield. 340 Bridge St.
1896 Boyd, James Van Wagner..Springfield. 24 Oxford St.
1885 Boyd, Samuel George......San Francisco, Calif. 133 Geary St.
1911 Boyden, Arthur Henry... Worcester. 875 Main St.
1901 Boyer, Joseph Napoleon....Springfield. 577½ Main St.
1906 Boyle, Jeremiah Joseph....Cambridge. 1431 Cambridge St.
1903 Boyle, John Francis.......Lowell. 32 Whipple St.
1902 Brace, George Wells.......Westfield. 5 Woronoco Av.
1886 Brackett, Elliot Gray.......Boston. 166 Newbury St.
1895 Bradford, Cary Carpenter..Southbridge. 67 Main St.
1873 Bradford, Edward Hickling Boston. 133 Newbury St.
1878 Bradford, Henry Withington Wolfeborough, N. H.
1883 Bradley, Charles Seymour..Roxbury (Boston). 71 Walnut Av.
1906 Brady, Frank Robert.....Lowell. 8 Merrimack St.
1903 Brady, James Francis......Boston. 599 Tremont St.
1908 Brady, Joseph Edward.....Brockton. 231 Main St.
1912 Brady, William Francis....Holyoke. 348 Dwight St.
1871 Bragdon, George Albert †1906 Middletown, Conn.
1890 Bragdon, Horace Elwood...East Boston (Boston). 7 Central Sq.
1894 Bragg, Frank Adelbert.....Foxborough. School St.
1902 Bragg, Leslie Raymond....Webster. 124 Main St.
1884 Brainerd, John Bliss.......Brookline. Office, Boston. 419 Boylston St.
1907 Brainerd, Walter Scott....Bradford (Haverhill). Office, Haverhill. 91 Merrimack St.
1909 Brant, Austin.............Boston. 483 Beacon St.
1915 Brassil, Timothy Francis..Cambridge. 297 Broadway.
1903 Brayton, Roland Walker...Dorchester (Boston). 693 Washington St.
1909 Brearton, Edward John....Dorchester (Boston). 2 Pearl St.
1885 Breck, Samuel............Middleboro. Office, Boston. 238 Newbury St.
1901 Breed, Nathaniel Pope.....Lynn. 9 Washington Sq.
1910 Breen, James Henry.......Hudson. 164 Main St.
1911 Bremer, John Lewis.......Boston. 416 Beacon St.
1887 Brennan, John Joseph......Worcester. 390 Main St.
1913 Breslin, John George...... Boston. 514 Commonwealth Av.
1914 Bresnihan, Frank Nesdel.. Cambridge. 252 Harvard St.
1915 Brewster, David Trueman, Jr. Hathorne (Danvers). State Hospital.
1893 Brewster, George Washington Wales Boston. 213 Beacon St.
1898 Brickett, Beatrice Hannah.Norfolk Downs (Quincy). Office, Boston. 24 Newbury St.
1912 Brides, Arthur Edward....Brockton. 101 Main St.
1899 Bridgman, Burt Nicholas...Umzumbe, Morrison's Post. Natal, S. Africa.
1893 Briggs, Charles Albert.....Freetown.
1880 Briggs, Edward Cornelius..Chestnut Hill (Newton). Office, Boston. 129 Marlboro' St.
1883 Briggs, Frederick Melancthon Boston. 536 Commonwealth Av.
1917 Briggs, Joseph Emmons... Boston. 477 Beacon St.
1899 Briggs, Lloyd Vernon......Boston. 64 Beacon St.
1903 Brigham, Clarence Sumner.Leominster. 61 Pearl St.
1868 Brigham, Edwin Howard..Brookline. Office, Boston. 8 The Fenway
1912 Brigham, Francis Gorham.Boston. 35 Bay State Rd.
1907 Brigham, Fred Clayton....Springfield. 349 State St.
1907 Bright, James Cooper......Fall River. 710 South Main St.
1915 Brindamour, Joseph Edmond Holyoke. 81 High St.
1906 Brindisi, Rocco.............Boston. 149 Richmond St.
1917 Bristol, De Los Judson, Jr..Boston. 24 McLean St.
1908 Broderick, Frank Patrick..Jamaica Plain (Boston). 67 South St.
1911 Broderick, Thomas Frederick Brighton. Office, Boston. 501 Beacon St.
1884 Broidrick, James Patrick †1914 Jamaica Plain (Boston). 815 Center St.
1906 Brooks, Edith May........Boston. 483 Beacon St.
1874 Brooks, Lawton Stickney †1913 Springfield. 128 Chestnut St.
1890 Brooks, William Allen Lincoln. Office, Boston. 167 Beacon St.
1893 Brough, David Dandie.....Boston. City Hall Annex.
1899 Broughton, Arthur Nicholson Jamaica Plain (Boston). 10 Roanoke Av.
1878 Broughton, Henry White...Jamaica Plain (Boston). 7 Lakeville Pl.
1896 Brousseau, William Gilbert..Cambridge. 2222 Mass. Av.
1911 Brown, Arthur Aloysius....Swampscott.
1910 Brown, Arthur Linwood....Winchester. Office, Boston. 419 Boylston St.
1894 Brown, Daniel Joseph......Springfield. 317 Main St.
1898 Brown, Edward Wells.....Northampton. 39 Main St.
1883 Brown, Frank Byron.......Dorchester (Boston). 529 Washington St.
1884 Brown, George Artemas....Barre. Broad St.
1904 Brown, George Christopher.Worcester. 112 Franklin St.
1917 Brown, Henry Seabury....Roxbury (Boston). R. B. Brigham Hosp.
1914 Brown, Herbert Rutherford.Rochester, N. Y. 224 Alexander St.
1907 Brown, Lloyd Thornton....Boston. 372 Marlboro' St.
1869 Brown, Marshall Lebanon †1908 Address unknown.
1893 Brown, Martin Millard.....North Adams. 112½ Main St.
1873 Brown, Orland Jonas......North Adams. 112 Main St.
1902 Brown, Percy..............Boston. 155 Newbury St.
1914 Brown, Ralph Neally.......Malden. 1 Concord St.
1915 Brown, Roy Farrington...Fall River. 878 Rock St.
1906 Brown, Wallace Everett....North Adams. Berkshire Hills Sanatorium.
1888 Brown, Wilfred Gardner...Plymouth. 4 North St.
1908 Brown, William James.... Boston. 1109 Boylston St.
1909 Brown, William John......Reading. 18 Salem St.
1914 Browne, William Edward..Boston. 43 Bay State Road.
1881 Browne, William Tyler....Norwich, Conn. 275 Broadway.
1898 Brownrigg, Albert Edward Nashua, N. H. Highland Springs Sanitarium.
1888 Brownrigg, John Sylvester Roxbury (Boston). 16 Delle Av.
1895 Bruce, Daniel Angus.......Atlantic (Quincy).
1917 Bruce, Jacob Baldwin.....Boston. 496 Commonwealth Av.
1896 Bruce, John Angus........Everett. 699 Broadway.
1913 Brunelle, Arthur Lord.....New Bedford. 1498 Acushnet Av.
1898 Brunelle, Pierre...........Lowell. 10 East Merrimack St.
1917 Bryan, William Alvin.....Hathorne (Danvers). State Hospital.
1893 Bryant, Alice Gertrude....Boston. 502 Beacon St.
1906 Bryant, Clarence Edmund..Hyde Park (Boston). 101 Highland St.
1901 Bryant, Frederick.........Worcester. 778 Main St.
1892 Bryant, Giles Waite.......West Somerville (Somerville). 36 College Av.
1911 Bryant, John..............Boston. 338 Marlboro' St.
1902 Bryant, John Edmund.....Haverhill. 50 Merrimack St.

1874 Bryant, Lewis Lincoln.....Cambridge. 930 Mass. Av.
1909 Bryant, Mason David......Lowell. 8 Merrimack St.
1887 Bryant, William Sohier....New York, N. Y. 41 East 33d St.
1909 Bucholz, Carl Hermann....Cambridge. Office, Boston. 139 Beacon St.
1893 Buck, Augustus Walker....Fall River. 252 Pine St.
1914 Buck, Clifton Leon........Danvers. 35 High St.
1882 Buck, Howard Mendenhall.Boston. 857 Beacon St.
1899 Buck, Maurice Allen.......Billerica.
1917 Buck, William Edgar......Wilmington. Church St.
1914 Buckley, Daniel Joseph.....Arlington. 240 Broadway.
1913 Buckley, George Ambrose..Brockton. 28 Main St.
1886 Buckley, Philip Townsend..South Boston (Boston). 529 Broadway.
1906 Buckley, William Stephen..Brighton (Boston). 253 Market St.
1911 Budington, Harold Fairchild Springfield. 1019 State St.
1917 Budreski, Alphonse Frank.Brighton (Boston). St. Eliz. Hospital.
1899 Buehler, George Van Buskirk Cambridge. Office, Boston. 1075 Boylston St.
1903 Bufford, John Henry.......Brookline. Office, Boston. 390 Commonwealth Ave.
1898 Buffum, Herbert Edwin....Somerville. 129 Perkins St.
1874 Bulfinch, George Greenleaf.Brookline. 526 Harvard St.
1902 Bulkeley, Frank Stedman..Ayer. Washington St.
1889 Bullard, John Thornton....New Bedford. 428 County St.
1880 Bullard, William Norton...Boston. 89 Marlboro' St.
1915 Bunker, Sidney Moore.....Worcester. State Hospital.
1907 Burbeck, Edward Kimball..Salem. 245 Lafayette St.
1906 Burgess, Charles James....Lawrence. 37 Whitman St.
1905 Burke, Francis Ramon.....Quincy. 1220 Hancock St.
1910 Burke, George Herbert.....Springfield. 36 Beaumont St.
1892 Burke, James Joseph......Easthampton. 10 Center St.
1896 Burke, Michael Francis....Natick. 12 West Central St.
1901 Burke, Walter Thomas......Medford. 112 Salem St.
1899 Burke, William Henry, Jr..Cambridge. 2 Bond St.
1902 Burley, Benjamin Thomas.Worcester. 19 High St.
1909 Burlingham, Louis Herbert. St. Louis, Mo. 600 So. Kingshighway.
1906 Burnett, Francis Lowell....Manchester. Office, Boston. 205 Beacon St.
1897 Burnett, Frank Hollis.....Brockton. 153 Main St.
1894 Burnham, Elmond Arthur..Boston. 154 Huntington Av.
1901 Burnham, Joseph Forrest..Lawrence. 301 Essex St.
1905 Burnham, Parker..........Gloucester. 37 Pleasant St.
1899 Burns, Frederick Stanford.Boston. 237 Marlboro' St.
1892 Burns, Hiram Hutchins....Plymouth. 9 North St.
1910 1915 Burns, Robert Francis....Fitchburg. 2 Lunenburg St.
1915 Burns, Walter Linn ......Lynn. 81 North Common St.
1886 Burrage, Walter Lincoln...Boston. 282 Newbury St.
1907 Burrows, Marion Cowan...Lynn. 68 Ocean St.
1915 Burt, Clarence Edward....New Bedford. 180 Elm St.
1911 Burt, Edward Walter..... Westport. Office, Fall River. 151 Rock St.
1885 Burt, Frank Leslie........Somerville. 15 Adams St.
1885 Burton, Stephen Casper....Pittsfield. 47 West Housatonic St.
1909 Bush, Arthur Dermont.....Los Angeles, Calif. 3012 LaSalle Av.
1874 Bush, John Standish Foster.Boston. †1915
1901 Bushnell, Edward Henry...Quincy. 566 Washington St.
1906 Bushold, Fred George.....Lawrence. 60 Saunders St.
1916 Butler, Alice Etta.........Boston. 483 Beacon St.
1899 Butler, Charles Shorey.....Boston. 257 Newbury St.
1916 Butler David Mathew.....Brockton. Brockton Hospital.
1916 Butler, Francis Joseph....Worcester. 69 Lincoln St.
1897 Butler, George Edward....Fall River. 674 South Main St.
1892 Butler, John Edward......Dorchester (Boston). 64 Monadnock St.
1905 Butler, Patrick Francis....Allston (Boston). Office, Boston. 496 Commonwealth Av.
1903 Butler, Richard Bernard...Fall River. 80 Columbia St.
1917 Butler, Samuel ....West Medway (Medway). Main St.
1897 Butler, William Hodnett...Fall River. 234 Bedford St.
1904 Butterfield, George Kittredge Worcester. Grafton State Hospital.
1884 Buzzell, Daniel Thompson. Wilmington.
1892 Bychower, Victor..........Malden. 226 Cross St.
1895 Byrne, Charles Armstrong..Hatfield. 46 Main St.
1912 Byrne, Claudius James.... Worcester. 1066 Main St.
1904 Byrnes, Harry Francis.....Springfield. 4 Chestnut St.

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1898 Cabot, Hugh...............Boston. 87 Marlboro' St.
1892 Cabot, Richard Clarke.....Boston. 1 Marlboro' St.
1911 Cady, Frederic Benjamin Mooers Cambridge. 79 Brattle St.
1886 Cahill, Charles Sumner....Cambridge, 311 Prospect St.
1910 Cahill, John William......Worcester. 390 Main St.
1915 Caines, Richard John Ridgeway Boston. 175 Mass. Av.
1903 Caisse, George Emile......Lowell. 724 Merrimack St.
1909 Calitri, Constant...........Lawrence. 100 Jackson St.
1891 Calkin, Barry Howes......Stellarton, N. S.
1894 Calkins, Cheney Hosmer...Springfield. 383 Union St.
1903 Calkins, Irving Romaro....Springfield. 299 Central St.
1862 Calkins, Marshall †1893 Springfield. 14 Maple St.
1884 Call, Emma Louisa.......Cambridge. 5 Washington Av.
1873 Call, Norman †1910 Brookline. 61 Sewall Av.
1908 Callahan, Henry Alphonsus. Jamaica Plain (Boston). 336 Center St.
1915 Callahan, John Francis....Brockton. 231 Main St.
1887 Callanan, Sampson Aloysius.Roxbury (Boston). 109 Warren St.
1911 Camfill, Robert Emmet.....Springfield. 148 Chestnut St.
1902 Canedy, Charles Francis...Greenfield. 17½ Federal St.
1872 Canedy, Francis Joel †1913 Shelburne Falls (Shelburne). 60 Bridge St.
1909 Canfield, William Chase... St. Petersburg, Fla. P. O. Box 1533.
1912 Canney, Ellen Rose........New Bedford. 552 County St.
1904 Cannon, Walter Bradford..Cambridge. Office, Roxbury (Boston). 240 Longwood Av.
1913 Capeles, Thomas Francis...Haverhill. 197 Merrimack St.
1898 Carden, Charles James....Haverhill. 284 Washington St.
1908 Carey, Bernard William...Fitchburg. 6 Prichard St.
1916 Carey, Francis Arthur.....Taunton. 87 Washington St.
1896 Carleton, Dudley...........Springfield. 137½ State St.
1898 Carleton, Ralph............Springfield. 10 Temple St.
1906 Carley, Frederic James....North Attleborough. 1 Church St.
1909 Carley, Margaret Elizabeth New York, N. Y. 993 Park Av.
1911 Carlisle, Frank Henry.....Foxborough. State Hosp.
1908 Carlton, Frank Carr.......Salem. 16 North St.
1906 Carney, Patrick Joseph.....Worcester. 626 Southbridge St.
1916 Caro, Heiman.............Palmer. Monson State Hospital.
1915 Carpenter, Robert John....North Adams. 65 Church St.
1910 Carr, Arthur Wyman......Bridgewater. 76 South St.
1909 Carr, Gladys Lydia........Brookline. 17 Stearns Rd.
1906 Carr, Percy Whitman......Hyde Park (Boston). 1172 River St.
1909 Carroll, Charles Curtis.....Dorchester (Boston). 10 Esmond St.
1911 Carroll, Henry Gerald.....Peabody. Office, Salem. 304 Essex St.
1905 Carroll, John Joseph.......Holyoke. 120 Chestnut St.
1899 Carroll, John Philip.......Woburn. 16 Winn St.

1914 Carroll, Michael James....Lenox. Main St.
1888 Carroll, Thomas Francis...Lowell. 219 Central St.
1897 Carruth, Sidney Stetson...Dorchester (Boston). 713 Dudley St.
1913 Carvell, Hanford..........Gloucester. 1050 Washington St.
1914 Carvill, Alphonso Holland..Somerville. 28 Highland Av.
1905 Carvill, Lizzie Maud.......Somerville. Office, Boston. 101 Newbury St.
1902 Cary, Foster Harrington...Denver, Colo. 645 Metropolitan Bldg.
1912 Casey, John Francis.......Allston (Boston). 94 Franklin St.
1916 Cass, Frank Ozro.........Provincetown. 284 A Commercial St.
1908 Casselberry, Clarence Marmaduke Brookline. Office, Boston. 1075 Boylston St.
1912 Cassels, Louis Raymond...Worcester. 60 Franklin St.
1908 Cassidy, James Joseph.....Lowell. 10 East Merrimack St.
1913 Castleman, Philip..........Boston. 43 Chambers St.
1914 Caswell, Bertram Horace..Somerville. 196 Broadway.
1910 Caswell, Walter Emery....Campello (Brockton). 1147 Main St.
1903 Caulfield, Thomas Edward Woburn. 14 Church Av.
1897 Cavanagh, Charles Russell Dorchester (Boston). 19 Richmond St.
1905 Cavanaugh, Thomas Edward Holyoke. 245 Maple St.
1905 Celce, Frank Frederick....Holyoke. 264 Maple St.
1905 Celce, Jean Henriette.....Holyoke. 264 Maple St.
1909 1915 } Ceconi, John Aloysius { Dorchester (Boston). 544 Washington St.
1913 Chace, Fenner Albert......Fall River. 373 North Main St.
1888 Chadbourne, Arthur Patterson Boston. 193 Beacon St.
1917 Chadwell, Orville Rogers..Jamaica Plain (Boston). 793 Center St.
1895 Chadwick, Henry Dexter...Westfield. State Sanatorium.
1916 Chalfen, Samuel Edward..Cambridge. 1129 Cambridge St.
1906 Chalmers, Hattie Elizabeth.Marlborough. 32 West Main St.
1908 Chalmers, Robert..........Woburn. 49 Pleasant St.
1872 Chamberlain, Myron Levi..Boston. 482 Commonwealth Av.
1895 Chamberlain, William Eugene Rutland.
1914 Chamberlin, Harold Augustus North Abington (Abington). 301 Plymouth St.
1907 Champion, Merrill Edwin..Wollaston (Quincy). 50 Phillips St.
1905 Chandler, Clarence Luther.Fitchburg. 44 Prichard St.
1915 Chandler, Harold Beckles..West Newton (Newton). 51 Winthrop St.
1883 Chandler, Henry Beckles...West Newton (Newton). Office, Boston. 34½ Beacon St.
1888 Chandler, Norman Fitch...Medford. 82 High St.
1911 Chandler, Thomas Evans...Boston. 19 Bay State Rd.
1873 1878 } Channing, Walter..... { Brookline. Boylston St and Chestnut Hill Av.
1898 Chapin, Clifford Samuel....Great Barrington. 321 Main St.
1891 Chapin, Delia Lucretia.....Springfield. 313 State St.
1906 Chapin, Laurence Dudley..Springfield. 20 Maple St.
1885 Chapin, Walter Henry.....Springfield. 675 State St.
1915 Chapin, William Andrew Robertson Springfield. Springfield Hospital.
1899 Chapman, Charles Ratchford Springfield. 174 State St.
1917 Chaput, Lucien Romeo....Haverhill. 3 Washington Sq.
1913 Charbonneau, Noe Napoleon Grafton. Fisherville P. O.
1886 Charles, Orlando Warrington Bryantville (Pembroke).
1900 Charteris, Mary Alena.....Worcester. 15 Irving St.
1908 Chase, Charles Otis........Watertown. 51 Mt. Auburn St.
1900 Chase, Edwin Llewellyn....Shrewsbury.
1908, Chase, Gilman Leeds......Clinton. 215 High St.
1907 Chase, Harrison Ayer......Brockton. 231 Main St.
1909 Chase, Heman Baker.......Hyannis (Barnstable). Main St.
1886 Chase, Heman Lincoln.....Brookline. 126 Harvard St.
1902 Chase, Henry Melville.....Boston. 409 Marlboro' St.
1855 Chase, Irah Eaton †1897 Haverhill. 59 Park St.
1915 Chase, Joseph, Jr..........Weymouth. 655 Broad St.
1902 Chase, Walter Greenough...Boston. 279 Marlboro' St.
1914 Cheever, Austin Walter.....Mattapan (Boston). Office, Boston. 510 Commonwealth Av.
1886 Cheever, Clarence Alonzo...Mattapan (Boston). 1531 Blue Hill Av.
1902 Cheever, David...........Boston. 355 Marlboro' St.
1891 Chenery, William Elisha...Boston. 222 Huntington Av.
1886 Cheney, Frederick Edward Concord. Office, Boston. 64 Commonwealth Av.
1905 Chesley, Alfred Ervan.....Lawrence. 181 Essex St.
1876 Chipman, William Reginald †1915 Chelsea. 44 County Road.
1917 Chisholm, Lawrence Chesley..Salem. 111 Federal St.
1906 Chisholm, Miles Dudley....Westfield. 128 Elm St.
1900 Choate, Horace Henry......Gloucester. 80 Middle St.
1903 Cholerton, Herbert.........West Somerville (Somerville). 94 College Av.
1902 Christian, Henry Asbury...Boston. 252 Marlboro' St.
1908 Christiernin, Charles Leonard East Orange, N. J. Office, New York, N. Y. 1 Madison Av.
1915 Chronquest, Alfred Peter..Hathorne (Danvers). State Hospital.
1895 Church, Charles Albert....Millbury. Elm St.
1912 Church, Claude Henry.....Fitchburg. Burbank Hospital.
1906 Churchill, John Darling....Plymouth. 63 Court St.
1895 Chute, Arthur Lambert....Boston. 350 Marlboro' St.
1888 Cilley, Daniel Plummer....Westborough. 30 East Main St.
1913 Claffy, John McMahon.....Springfield. 183 North Main St.
1891 Clancy, William Henry....East Cambridge (Cambridge). 80 Otis St.
1900 Clap, Edmund Wright......Boston. 390 Commonwealth Av.
1892 Clapp, Frank Horace......North Grafton (Grafton).
1898 Clark, Albert Ulysses Franklin Westborough. 10 Parkman St.
1869 Clark, David †1908 Springfield. 155 Long Hill.
1916 Clark, De Witt Scoville...Salem. 32 Washington Sq.
1901 Clark, Edward James......Lowell. 219 Central St.
1901 Clark, Ezra Warren †1914 Brockton. 3 Garden Road.
1913 Clark, Frank Robinson.....Newtonville (Newton). 227 Walnut St.
1901 Clark, Frederick Timothy...Westfield. 80 Elm St.
1893 Clark, George Henry.......Holyoke. 441 High St.
1905 Clark, George Oliver.......Boston. 142 Beacon St.
1911 Clark, Harry Ainsworth....North Andover. 47 Prescott St.
1906 1913 } Clark, John Donovan......Abington, Conn.
1886 Clark, Joseph Payson......Boston. 71 Marlboro' St.
1880 Clark, Julius Stimpson †1911 Melrose. 109 Mrytle St.
1889 Clark, Leonard Brown.....Waverley (Belmont). 36 Sycamore St.
1897 Clark, Mary Wilson...... Medford. 4 Washington St.
1892 Clark, Sidney Avery.......Northampton. 124 Main St.
1903 Clark, Thomas Francis.....Taunton. 62 Broadway.
1910 Clark, Webster Kimball....Greenfield. 6 Franklin St.
1907 Clark, William Irving, Jr...Worcester. 37 Pearl St.
1914 Clark-MacLeod, Emily.....Boston. 260 Newbury St.
1901 Clarke, Genevieve..........Cambridge. 825 Mass. Av.
1911 Clarke, Harry Carver......Lynn. 180 South Common St.
1904 Clarke. Inez Louise........Cambridge. 825 Mass. Av.

1888 Clarke, Israel James.......Haverhill. 112 Emerson St.
1910 Clarke, Joshua Williams...Attleborough. 48 Bank St.
1902 Clarke, Louis Henry.......Holyoke. 282 Maple St.
1915 Clarke, Mary Ella.........Malden. 629 Main St.
1915 Clarke, Willis Earl........Malden. 490 Pleasant St.
1897 Cleary, James.............Cambridge. 770 Mass. Av.
1914 Cleary, Robert Emmett....Holyoke. 1049 Dwight St.
1901 Cleaves, Ezra Eames......Rockport. 27 Main St.
1895 Cleaves, Frederick Henry..Brookline. Office, Boston. Custom House.
1908 Cleaves, Helen Frances Taft Palmer. Monson State Hospital
1874 Clement, George Wilmot...Roxbury (Boston). 275 Warren St.
1911 Cleveland, Heber Howe....Wellesley Hills. Office, Boston. 205 Beacon St.
1875 Cliff, Leander Albert.......Boston. 427 Shawmut Av.
1901 Cloudman, Harry Radcliffe Brockton. 33 Clinton Av.
1911 Clymer, George, Jr........Boston. 126 Bay State Rd.
1892 Cobb, Albert Crocker......Marion. Front St.
1895 Cobb, Carolus Melville.....Lynn. 10 Nahant St.
1907 Cobb, Chester Thompson.. Northampton. 91 South St.
1893 Cobb, Farrar..............Boston. 28 Commonwealth Av.
1889 Cobb, Frederic Codman....Boston. 11 Marlboro' St.
1912 Cobb, Gardner Nathan.....Boston. North End Park. U. S. S. "Ranger."
1897 Cobb, Oliver Warren.......Easthampton. 59 Main St.
1914 Coburn, Harry Ray........Tewksbury. State Infirmary.
1904 Coburn, Horace Fordyce...Lowell. 9 Central St.
1898 Cochran, William James...Natick. 50 West Central St.
1914 Cochrane, Robert Carlyle..Boston. 96 Bay State Rd.
1905 Cockett, Marguerite Standish Am. Fund for French Wounded. L'Alcazar Av. des Champs Elysees. Paris, France.
1895 Codman, Ernest Amory....Boston. 227 Beacon St.
1912 Cody, Edmond Francis.....New Bedford. 105 South 6th St.
1912 Cody, Harry Clinton.......New Orleans, La., 163 Dryades St.
1916 Cody, Peter White........Lawrence. 229 Andover St.
1885 Coffin, Arthur Baylies......Dorchester (Boston). Office Boston. 159 Devonshire St.
1907 Coffin, Frank Herbert......Haverhill. 91 Emerson St.
1896 Coffin, Rockwell Augustus..Boston. 234 Clarendon St.
1887 Cogan, Joseph Ambrose....Boston. 419 Boylston St.
1892 Cogswell, George Proctor...Cambridge. 18 Garden St.
1896 Cogswell, William.........Haverhill. 151 Merrimack St.
1917 Cohen, Joseph Powitzer...Brookline. 105 Winchester St.
1916 Cohen, Milton Michael....Roxbury (Boston). 40 Gaston St.
1910 Colberg, Peter Albert......Worcester. 17 Stebbins St.
1897 Colburn, Harry Hayford...Boston. 103 Mt. Vernon St.
1912 Cole, Arthur Judson.......Holbrook. North Franklin St.
1892 Collier, Lawrence Henry Goodwin Jamaica Plain (Boston). 212 South St.
1915 Collins, Frank Laforest....Salem. 31 Charter St.
1910 Collins, Joseph Daniel.....Northampton. 90 Main St.
1903 Collins, Richard...........Waltham. 837 Main St.
1899 Collins, William James....Northampton. 90 Main St.
1908 Collins, William Morris....Lowell. 22 Central St.
1881 Colt, Henry...............Pittsfield. 193 South St.
1879 Comey, Perley Pierce......Augusta, Ga. 872 Hillman St.
1883 Conant, William Merritt...Boston. 486 Commonwealth Av.
1913 Condrick, John Joseph.....Brockton. 68 Main St.
1883}
1900} Cone, Dwight Eleazer.. {Fall River. 938 South Main St.
1913 Conley, Brainard Francis..Malden. 203 Main St.
1909 Conlin, Robert Emmett....Woburn. 353 Main St.
1906 Conlon, Frank Aloysius....Lawrence. 301 Essex St.
1891 Connell, Arthur Irving.....Fall River. 456 South Main St.
1909 Connelly, John Edward....Brookline. 9 Sewall Av.
1902 Conner, Homer Leigh......Haverhill. 85 Emerson St.
1897 Connor, Charles Frank.....New Bedford. 11 North Orchard St.
1902 Conro, Arthur Clifton......Attleborough. 15 Mechanic St.
1906 Conroy, Edward Cornelius.Andover. Office, Lawrence. 263 Essex St.
1895 Conroy, Peter John........Everett. 355 Broadway.
1915 Constans, Frank Elmore...Brockton. 7 Main St.
1879 Cook, Charles Henry.......Natick. 35 West Central St.
1914 Cook, James Henry........Braintree. 346 Washington St.
1914 Cook, John William........Mansfield. 114 North Main St.
1905 Cook, Philip Howard......Worcester. 771 Main St.
1893 Cook, Snow Parker Freeman Gloucester. 132 Main St.
1905 Cooley, Abbott Lathrop....Chicopee Falls (Chicopee). 130 Broadway.
1885 Coolidge, Algernon.........Brookline. Office, Boston. 613 Beacon St.
1893 Coolidge, John Nelson......New York, N. Y. 1 Madison Av.
1901 Coolidge, Sumner..........Middleborough. Lakeville State Sanatorium.
1898}
1903} Coon, George Bailey......Tampa, Fla.
1907}
1915} Coon, William Hall........Haverhill. 22 Park St.
1912 Cooney, Margaret Blanche..Haverhill. 67 Winter St.
1909 Cooney, Michael Edward..Northampton. 39 Main St.
1892 Cooper, Almon.............Brookline. 114 Park St.
1915 Copeland, Elmer Humphrey Northampton. 168 Elm St.
1878 Copeland, Horatio Franklin †1913 Whitman. 532 Washington St.
1906 Corbett, Jeremiah Joseph..Malden. Office, Boston. 520 Beacon St.
1911 Corcoran, George Bartlett..West Springfield. 30 Park St.
1909 Corcoran, John Gilbert.....Hamilton.
1905 Corey, Frederick Hall......Rockland. 361 Union St.
1907 Coriat, Isador Henry.......Boston. 416 Marlboro' St.
1911 Cornforth, Herbert Huskisson Hot Springs, S. Dakota.
1913 Cornish, Solon Washington. Everett. 79 Winthrop St.
1907 Cornwall, Andrew Payne...Brookline. Office, Boston. 535 Beacon St.
1904 Cort, Parker Martin.......Springfield. 691 State St.
1917 Cosgrove, Joseph Justin...Westfield. State Sanatorium.
1906}
1913} Costello, John Henry... {Dorchester (Boston). 68 Pleasant St.
1912 Cotter, Timothy Francis....Haverhill. 116 Main St.
1917 Cottle, Louis Albert....... Worcester. 50 Orange St.
1897 Cotton, Frederic Jay.......Boston. 520 Commonwealth Av.
1895 Coues, William Pearce.....Boston. 31 Mass. Av.
1895 Couillard, Pierre Leonard..Manchaug (Sutton).
1892 Councilman, William Thomas Boston. Office, Roxbury (Boston). 240 Longwood Av.
1911 Coupal, James Francis.....Roxbury (Boston). Office, Boston. 1091 Boylston St.
1915 Courie, Wadie Fadoul.....Detroit, Mich. 198 Orleans St.
1914 Coursey, Frank Rudolph...Boston. 802 Tremont St.
1893 Courtney, Joseph William..Boston. 94 Bay State Road.
1914 Courtney, Thomas Joseph..Waltham, 26 Common St.
1892 Cousins, Nicholas William.Waltham. 17 Crescent St.
1872 Cowles, Edward †1910 Plymouth. 8 Sever St.
1886 Cowles, Frank Augustus...Beverly. 276 Cabot St.
1901 Cowles, Frederick Waterman West Brookfield.
1910 Cowles, William Lee.......Boston. 497 Beacon St.
1887 Cowles, William Norman.. Jamaica Plain (Boston). 44 Southbourne Rd.

1907 Cox, Ann Caroline.........Boston. 70 Huntington Av.
1914 Cox, Oscar Francis.......Boston. 1081 Boylston St.
1905 Cox, Simon Francis........New Haven, Conn. New Haven Hospital.
1913 Cox, Stanley Cullen........Holyoke. 242 Maple St.
1901 Coyne, Thomas Joseph.....Roxbury (Boston). 636 Dudley St.
1914 Crabtree, Ernest Granville..Brookline. Office, Boston. 87 Marlboro' St.
1889 Craigin, George Arthur.....Boston. 18 Hereford St.
1891 Cram, John Wesley........Colrain.
1915 Crandall, Walter Midkiff..Lawrence. 332 Broadway.
1896 Crandell, Arthur Richmond.Taunton. 48 Church Green.
1899 Crandon, Le Roi Goddard..Boston. 366 Commonwealth Av.
1906 Crane, Bayard Taylor.....Rutland. Maple Av.
1909 Crane, Clarence............Boston. 224 Huntington Av.
1899, 1907 Crawford, Francis Xavier. Boston. Deer Island Hospital.
1910 Crawford, Frank Wallis....Holbrook. North Franklin St.
1885 Crawford, Sarah Marcy †1911 Newton Center (Newton). 194 Ward St.
1914 Creamer, William Henry...Fall River, 466 N. Main St.
1908 Creely, Oscar Slade........Watertown. 63 Mt. Auburn St.
1906 Cregg, Francis Aloysius....Lawrence. 477 Essex St.
1907 Crispo, Peter Timothy.....Fall River. 439 Bedford St.
1894 Croacher, Anna Wood......New Bedford. 51 Fifth St.
1892 Crocker, Benton Pulsifer...Foxborough. South St.
1904 Crocker, Louis Allen.......Brewster.
1887 Crocker, Susan Elizabeth †1901 Los Angeles, Calif. 849 W. 34th St.
1891 Crockett, Eugene Anthony.Boston. 298 Marlboro' St.
1898 Croft, Benjamin Pomeroy..Bernardston. Office, Greenfield. 17 Federal St.
1917 Croissant, Charles AugustusWorcester. 8 Blair St.
1913 Croke, Louis Ward........Dorchester (Boston). 22 Mather St.
1914 Cronin, Herbert Joseph....Cambridge. 69 Concord Av.
1899 Cronin, Michael John......Roxbury. Office, Boston. 520 Beacon St.
1898 Cronin, Thomas Joseph....Worcester. 49 Pleasant St.
1909 Crosbie, Arthur Hallam....Boston. 79 Milk St.
1903 Crosby, Leander Marshall..Wakefield. Office, Boston. 419 Boylston St.
1910 Crosby, Walter Hiram.....Brighton (Boston). 305 Faneuil St.
1912 Cross, Albert Elmer.......Worcester. 390 Main St.
1899 Cross, William Patrick.....South Boston (Boston). 491 Broadway.
1897 Crossman, Frank Albert...Dorchester (Boston). 677 Dudley St.
1881 Croston, John Francis.....Haverhill. 83 Emerson St.
1885 Crowell, Samuel...........Dorchester (Boston). 8 Monadnock St.
1897 Crowley, Jeremiah Francis.Adams. 15 Park St.
1911 Cuddy, James Francis.....Athol. 585 Main St.
1915 Cudworth, Clarence Duane Miller's Falls (Montague).
1887 Culbertson, Emma Valeria Pintard Bicknell Boston. 33 Newbury St.
1916 Cullen, Charles Andrew...Hyde Park (Boston). 1273 Hyde Park Av.
1899 Cummin, John White......Boston. 9 Mass. Av.
1901 Cummings, Alvah Cochran.Newton. 337 Washington St.
1911 Cummings, Dana Frank....Cherryfield, Me.
1876 Cummings, Edwin Francis.Revere. Office, Boston. 43 State House.
1904 Cummings, John Joseph....Worcester. 53 Pleasant St.
1901 Cummings, Morton Everett Malden. 358 Pleasant St.
1888 Cummings, Mott Alvah.....Winchester. 69 Church St.
1905 Cummins, Loretta Joy.....Boston. 45 Bay State Road.
1913 Cunningham, Allan Rowe..Boston. 45 Bay State Road.
1903 Cunningham, John Henry, Jr. Boston. 46 Gloucester St.
1914 Cunnningham, Joseph Henry Cambridge. 959 Mass. Av.
1914 Cunningham, Thomas Edward, Jr. Cambridge. 5 Ellery St.
1905 Curley, Clarence Proctor...Provincetown. Commercial St.
1917 Curran, George Lally......North Adams. 63 Eagle St.
1914 Curran, John Francis......Worcester. 505 Pleasant St.
1905 Curran, Simon Francis.....Dorchester (Boston). 104 Norfolk St.
1917 Currie, Inez Margaret.....Worcester. Memorial Hospital.
1912 Currier, Cyrus Richardson.Sandwich. Main St.
1900 Currier, William Eugene...Leominster. 87 Merriam Av.
1890 Currier, William Hale.....Pittsfield. 69 Linden St.
1898 Curry, Edmund Farnham..Fall River. 499 Hanover St.
1908 Curry, Ernest Francis.....Sagamore (Bourne). Keith Block.
1915 Curtin, John Francis...... North Abington (Abington). 6 Plymouth St.
1909 Curtis, Charles Leverett...Salem. 78 Federal St.
1887 Curtis, Francis George.....Chestnut Hill (Newton). 399 Hammond St.
1910 Curtis, Harlan Fuller......East Longmeadow (Longmeadow). South Main St.
1890 Curtis, Henry Fuller.......Somerville. 145 Perkins St.
1899 Curtis, William Goodwin...Wollaston (Quincy). 10 Grand View Av.
1906 Cushing, Arthur Alden.....Brookline. 108 Marion St.
1913 Cushing, Harvey...........Brookline. Office, Roxbury (Boston). Peter Bent Brigham Hospital.
1881 Cushing, Hayward Warren.Boston. 70 Commonwealth Av.
1887 Cushman, Andrew Bernard.South Dartmouth (Dartmouth).
1882 Cushman, George Thomas..Roxbury (Boston). 46 Dudley St.
1911 Cushman, Howard Lewis..Methuen. 70 Broadway.
1906 Cusick, Lawrence Francis..Nahant. Office Boston. 99 Newbury St.
1898 Cusick, Thomas Francis....Taunton. 126 Weir St.
1898 Cutler, Charles Norton.....Chelsea. 309 Washington Av.
1872 Cutler, Elbridge Gerry.....Boston. 214 Beacon St.
1916 Cutler, Elliott Carr.......New York, N. Y. 23 East 33rd St.
1912 Cutler, George David......Boston. 180 Marlboro St.
1914 Cutler, Myron Fred........Southbridge. 39 Hamilton St.
1915 Cutler, Raymond William..Worcester. 62 Coburn Av.
1902 Cutter, Arthur Hardy.....Methuen. Office, Lawrence. 43 Broadway.
1908 Cutter, Irving Taylor......Winchester. 31 Church St.
1887 Cutts, Harry Madison......Brookline. 105 Aspinwall Av.
1906 Cyr, Emile Edouard.......Lawrence. 81 Bradford St.

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1905 Dacey, Cornelius Joseph...Brockton. 12 Cottage St.
1902 Dadmun, Eliza Josephine..Boston. 483 Beacon St.
1904 Dailey, Edward Joseph....Somerville. 46 Bow St.
1913 Dalton, Charles Howard...Brookline. 405 Harvard St.
1908 Dalton, George Frederick..Springfield. 6 Maple St.
1882 Daly, Bernard Thomas.....Roxbury (Boston). 320 Dudley St.
1905 Daly, Jeremiah James.....Andover. Office, North Andover. 106 North Main St.
1898 Daly, Timothy Joseph......Lawrence. 62 Bradford St.
1896 Daly, William Joseph......Boston. 31 Mass. Av.
1902 Dame, Fred Russell........South Braintree (Braintree). 1010 Washington St.
1895 Damon, Arthur Llewellyn..North Wilbraham (Wilbraham). Chapel St.
1906 Dana, Harold Ward........Brookline. Office, Boston. 483 Beacon St.
1891 Dane, John................Jamaica Plain. Office, Boston. 29 Marlboro' St.

1906 Danforth, Harland Abbott..Cliftondale (Saugus). 276 Lincoln Av.
1878 Daniels, Edwin Alfred.....Boston. 302 Newbury St.
1916 Daniels, Ora George......Canton. Mass. Hospital School.
1908 Darling, Arthur Edwin.....Lynn. 65 Broad St.
1895 Darling, Charles Balfour...Roxbury (Boston). Office, Boston. 419 Boylston St.
1894 Darling, Eugene Abraham.Cambridge. 134 Brattle St.
1907 Dascombe, Otho Lee.......Waltham. 255 Moody St.
1900 Daudelin, Simeon Alphonse Worcester. 11 Elm St.
1871 Davenport, Bennett Franklin, †1910 Watertown. Office, Boston. 34 School St.
1877 Davenport, Francis Henry.Boston. 390 Commonwealth Av.
1887 Davenport, James Henry...Providence, R. I. 210 Benefit St.
1906 Davidson, Henry James Duff Springfield. 26 Maple St.
1891 Davidson, Kallman Meyer..Roxbury (Boston). Office, Boston. 31 McLean St.
1895 Davis, Bessie Delano.......Cambridge. 21 Magazine St.
1911 Davis, Charles Allen.......South Dennis (Dennis).
1899 Davis, Charles Henry......South Hamilton (Hamilton).
1888 Davis, Ella Maxfield......Holyoke. 188 Chestnut St.
1906 Davis, Ernest Leland.......Springfield. 106 State St.
1907 Davis, Frank Albert........Boston. Hotel Brunswick.
1913 Davis, Frederick Durand...Westfield. 57 North Elm St.
1915 Davis, George Rufus......Marshfield Hills (Marshfield). Main St.
1914 Davis, Henry Levi.........Lynn. 12 Van Buren Terr.
1899 Davis, Lincoln.............Boston. 205 Beacon St.
1906 Davis, Minot Flagg........Boston. 15 Charles St.
1880 Davis, Samuel Thomas.....Vineyard Haven (Tisbury).
1897 Davis, Stephen Rich.......Lynn. 188 Chestnut St.
1898 1913 } Davis, William Horace.. { Dorchester (Boston). 23 Beaumont St.
1905 Davison, Arthur Howard...Dorchester (Boston). 564 Washington St.
1914 Dawson, Roger Paul......Boston. 205 Beacon St.
1911 Day, Charles Orrin........Hingham. Main St.
1892 Day, Clarence Currier.....Newburyport. 23 Titcomb St.
1916 Day, Edward Philip.......Dorchester (Boston). 385 Columbia Road.
1905 Day, Hilbert Francis......Boston. 45 Bay State Rd.
1914 Deacy, John Joseph........Lawrence. 32 Lawrence St.
1893 Deal, Edward Edwin......Brookline. 147 Winthrop Road.
1892 Deal, George Francis......Malden. 807 Salem St.
1896 Dean, Ralph Denniston....Taunton. 152 High St.
1866 Deane, Asahel Sumner †1902 Taunton. 60 Broadway.
1887 Deane, Wallace Harlow....Springfield. 137½ State St.
1907 Dearborn, George Van Ness..Cambridge. 6 Mason St.
1908 Dearborn, Henry Follansby..Methuen. Office, Lawrence. 193 Garden St.
1906 Dearborn, Henry Hale.....Becket.
1893 Dearing, Henry Lincoln....Braintree.
1881 DeBlois, Thomas Amory...Boston. 523 Newbury St.
1914 Deering, Charles Fuller....Danvers. 57 Elm St.
1905 Deering, George Edwin....Worcester. 129 Pleasant St.
1890 Dehn, Edward William....New Bedford. 23 Linden St.
1886 DeLand, Charles Airmet...Warren. 7 Quaboag St.
1898 De Langle, Charles Petit...Lynn. 540 Western Av.
1884 Delahanty, William Joseph.Worcester. 5 Trumbull Sq.
1885 1912 } Delano, Samuel..........Boston. 39 Newbury St.
1893 De Lue, Frederick Spaulding Needham. Office, Boston. 99 Newbury St.
1917 DeMarco, Thomas Andreas.Springfield. 686½ Main St.
1911 Dempsey, James Edward...Newton. 449 Washington St.
1895 Denig, Blanche Alpine.....Boston. 541 Boylston St.
1911 Dennen, Ralph Waite......Waltham. 258 Moody St.
1900 Dennett, Alonzo Gustin....Lowell. 40 Riverside St.
1897 Dennett, Charles Augustus.Arlington. 754 Mass. Av.
1898 Dennett, Daniel Clement...Winchester. 7 Washington St.
1917 Dennett, Paul Carroll......Chelsea. Frost Hospital.
1906 Denning, Edward John....South Boston (Boston). 577 Broadway.
1909 Denning, Frederic Joseph..South Boston (Boston). 216 Broadway.
1901 Denning, William Edward..Worcester. 63 Pleasant St.
1896 Dennison, Archibald Sayre.Lynn. 7 Franklin St.
1895 Denny, Francis Parkman...Brookline. 111 High St.
1915 Denny, George Parkman...Boston. 285 Marlboro' St
1904 DeNormandie, Robert Laurent Boston. 355 Marlboro' St
1916 Derby, Frederick William..Boston. 168 Huntington Av.
1903 Derby, George Strong......Boston. 7 Hereford St.
1892 Derby, William Parsons....Cambridge. 120 Pearl St
1914 Dervin Laurence James....Somerville. 218 Highland Av.
1916 Dervin, Peter John........Dorchester (Boston). 157 Harvard St.
1911 Desmond, Clarence Francis.Waltham. 552 Main St.
1909 Devenny, Joseph Henry....Dorchester (Boston). 2 King St.
1904 Devere, Fred Hewitt.......Auburn, R. I. 677 Park St.
1884 Devine, William Henry....South Boston (Boston). 595 Broadway.
1903 Devlin, Peter Clarke.......Lynn. 784 Western Av.
1886 Dewey, Charles Gipson.....Dorchester (Boston). 44 Alban St.
1906 Dewing, Louis Alexander..Boston. 215 Huntington Av.
1893 Dewis, John William.......Brookline. Office, Boston. 69 Newbury St.
1913 DeWolf, Charles Wentworth Tewksbury. State Infirmary.
1887 Dexter, Franklin..........Beverly. Office, Boston. 247 Marlboro' St.
1905 Dexter, Fred Fay..........Springfield. 2 Temple St.
1917 Dexter, Robert Besnard....Dorchester (Boston). State Hospital.
1915 Dezell, Frederick Burr....Lynn. 293 Euclid Av.
1907 Dickinson, Gyrdie Willie...Everett. 163 Elm St.
1898 Dickson, Richard Ensign...Holyoke. 598 Dwight St.
1910 Dillon, Michael John.......Springfield. 182 State St.
1917 Dillon, William Joseph....Springfield. 700 State St.
1917 DiMento, Vincent James...Boston. 349 Hanover St.
1894 Dion, Thomas Joseph......West Quincy (Quincy). 59 Cross St.
1912 Disbrow, Edward Perry....Worcester. City Hospital.
1901 Dix, George Alfred........Worcester. 105 Pleasant St.
1911 Dixon, Arthur.............Worcester, 313 Lincoln St.
1871 Dixon, Lewis Seaver.......Boston. 232 Clarendon St.
1881 Dixon, Robert Brewer.....Boston. 232 Clarendon St.
1881 1917 } Doble, Ernest Edgar.... Quincy. 150 Cross St.
1911 Dobson, William Marshall..Dorchester (Boston). State Hospital.
1896 Dodd, Isaac Spencer Finney Pittsfield. 24 North St.
1912 Dodd, John Edward.......Framingham. 33 Union Av.
1900 Dodge, Arthur Malcolm....Boston. 483 Beacon St.
1907 Dodge, George Francis.....Athol. 1302 Main St.
1886 Dodge, William Wooldredge.Boston. 1074 Boylston St.
1882 Doggett, Frederic Fobes....South Boston (Boston). 805 Broadway.
1916 Doherty, Francis Joseph..Brighton (Boston). 71 Chestnut Hill Av.
1885 Dolan, William Andrew....Fall River. 546 South Main St.
1915 Dolan, William Edward...Worcester. 32 Lincoln St.
1915 Dolan, William Francis....Quincy. 28 Adams St.
1899 Dole, Charles Frederick....Sharon. 2 North Main St.
1917 Dole, Kenneth Llewellyn..Jamaica Plain (Boston). 14 Roanoke Av
1889 Donahue, Hugh............Haverhill. 19 White St.
1895 Donahue, William Francis.Cambridge. 2294 Mass. Av.
1903 Donaldson, James Frank...Salem. 32 Lynde St.
1908 Donnell, Herbert Anthony.Medford Office, Boston. 536 Commonwealth Av
1885 Donoghue, Daniel Francis..Holyoke. 240 Maple St.
1894 Donoghue, Francis Dennis..Boston. 864 Beacon St.

1904 Donoghue, John Joseph....Worcester. 8 Vernon Sq.
1908 Donohue, Jeremiah Joseph. Worcester. 9 Trumbull St.
1887, 1904 Donovan, Michael Ricard. Lynn. 101 North Common St.
1915 Donovan, Sylvester Edward New Bedford. 8 Wing St.
1911 Donovan, Thomas Roche...Fitchburg. 40 Prichard St.
1910 Doonan, Henry Edward...South Hadley Falls. (South Hadley).
1916 Doray, Frank Leslie.......Worcester. 4 Normal St.
1880 Dorcey, James Edmund....Boston. 172 Harrison Av.
1900 Dorgan, Joseph Aloysius...Lawrence. 477 Essex St.
1909 Dorion, Kinton........... Lawrence. 99 Bradford St.
1885 Dorr, Charles Alonzo......Hingham. 304 Main St.
1901 Doucett, Frederick Luke...East Weymouth (Weymouth).
1905 Douglas, Archibald John...Westfield. 38 Elm St.
1899 Dow, David Crooker.......Cambridge. 6 Hilliard St.
1887 Dow, Edmund Scott.......Allston (Boston). 40 Harvard Av.
1911 Dow, Frank Edward.......Northampton. 16 Center St.
1897 Dow, George Farwell. ....Reading. 20 Woburn St.
1882 Dow, George William. .....Lawrence. 80 East Haverhill St.
1871 Dow, James Arthur †1913 Belmont. Payson Rd.
1914 Dowling, John Joseph......Boston. City Hospital.
1895 Downey, Charles John.....Springfield. 317 Main St.
1908 Downey, Henry Arthur....Mittineague (West Springfield). 388 Westfield St.
1906 Downing, Andrew Francis..Cambridge. 501 Huron Av.
1897 Downing, Franklin Chace..Lanesborough.
1909 Drake, Richard Alvin......West Medford (Medford). 6 Irving St.
1883 Drake, William Abram.....North Weymouth (Weymouth).
1901 Draper, Alexis Lumb......Dorchester (Boston). 1107 Washington St.
1885 Drew, Charles Aaron......Worcester. City Hospital.
1904 Drew, Frederick Prescott..East Dedham (Dedham).
1895 Drew, Maria Emma........Atlantic (Quincy). 39 Newbury Av.
1902 Dreyfus, Edna Weil.......Brookline. 30 Amory St.
1917 Driscoll, DeCourcey John..Lynn. 12 Whiting St.
1865 Driver, Stephen William †1915 Cambridge. 5 Farwell Pl.
1897 Drohan, James Henry......Brockton. 204 Main St.
1888 Drummey, Nicholas Daniel.Dorchester (Boston). 533 Washington St.
1904 Drury, Dana Warren......Roxbury (Boston). Office, Boston. 407 Marlboro' St.
1915 Drury, John Nelson.......Lowell. 8 Central St.
1906 Dubois, Eoline Church.....Springfield. 293 Bridge St.
1917 Ducharme, Alphonse Napoleon Worcester. 20 Hamilton St.
1901 Duckering, Florence West..Boston. 520 Beacon St.
1900 Duckering, William West...Dorchester (Boston). 2 Warner St.
1908 Ducy, William Dwyer......Brockton. 13 Clinton Av.
1894 Dudley, Augustus William..Cambridge. 1740 Mass. Av.
1891 Duff, John.................Charlestown (Boston). 5 Dexter Row.
1916 Duff, John, Jr.............Charlestown. Office, Boston. City Hospital.
1886 Duggan, John Thomas.....Worcester. 226 Southbridge St.
1906 Dunbar, Francis Herbert..Mansfield. P. O. address Boston. 46 Cornhill.
1893 Dunbar, Frank Collins.....Roxbury (Boston). 9 Beethoven St.
1914 Dunham, Adeline Frances..Cambridge. 881 Mass. Av.
1894 Dunham, Henry Bristol....Glen Gardner, N. J. N. J. Sanatorium.
1903 Dunn, Charles Hunter.... Boston. 178 Marlboro' St.
1894 Dunn, Charles Stein.......Haverhill. 133 Main St.
1874 Dunn, William Aloysius...Boston. 139 Beacon St.
1913 Dunn, William Ambrose....Boston. 154 Richmond St.
1909 Dunphy, Henry Ambrose...Thorndike (Palmer).
1885 Durant, Charles Edwin....Haverhill. 105 Emerson St.
1879 Durell, Thomas Moulton...Somerville. 131 Highland Av.
1866 Durgin, Samuel Holmes †1916 Duxbury. Millbrook P. O.
1867 Dutton, Charles............Wakefield. 33 Avon St.
1916 Dutton, Frank Kingsley...Chicopee Falls (Chicopee). 29 Arlington St.
1906 Dutton, Julius Maltby.....Westfield. 108 Elm St.
1902 Dutton, Richard...........Wakefield. 33 Avon St.
1890 Dwight, Edwin Welles.....Boston. 87 Milk St., Room 46
1896 Dwight, Henry Leonard....Copperopolis, Calif. Box 27.
1890 Dwyer, John Edward......Cambridge. 878 Mass. Av.
1911 Dwyer, John Edward, Jr.. Cambridge. 47 Inman St.
1905 Dwyer, William Joseph....Boston. Office, Cambridge. 118 Pearl St.
1882, 1904 Dyer, Ebenezer Alden... Whitman. 506 Washington St.

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1884 Eames, George Franklin...Boston. 249 Newbury St.
1912 Earle, George Henry.......Boston. 1138 Boylston St.
1916 Easter, Edna Frances.....Worcester. Belmont Hosp.
1901 Eastman, Alexander Crane.Springfield. 6 Chestnut St.
1906 Eastman, Theodore Jewett South Berwick, Me. Office, Boston. 71 Marlboro' St.
1900 Easton, Elwood Tracy.....Boston. 209 Newbury St.
1915 Eaton, Harold Burney.....Boston. 222 Marlboro' St.
1914 Eaton, Henry Douglas.....Stockbridge.
1906 Eaton, William Edward....U. S. Navy.
1866 Eddy, George Stetson †1909..Newton. 73 Sargent St.
1917 Edelstein, Samuel ....Roxbury (Boston). 31 Gaston St.
1861 Edes, Robert Thaxter †1912 Springfield. 251 Rimmon Av.
1913 Edsall, David Linn........Milton. Office, Boston. 80 Marlboro' St.
1867 Edson, Ptolemy O'Meara †1904 Roxbury (Boston). 36 Elm Hill Av.
1894 Edwards, William Lothrop. Boston. 33 Gloucester St.
1897 Egan, John Joseph.........Gloucester. 52 Pleasant St.
1906 Ehrenfried, Albert.........Boston. 362 Commonwealth Av.
1887 Ehrlich, Henry............Boston. 172 Commonwealth Av.
1915 Eidam, Carl Hermann..... Lawrence. 334 Prospect St.
1913 Eisner, Maurice Soloman...Pittsfield. 86 North St.
1874 Ela, Walter †1914 Cambridge. 13 Ash St.
1907 Elder, Fred Orestes........Wakefield. 22 Chestnut St.
1885 Eldridge, David Gorham...Dorchester (Boston). 15 Monadnock St.
1916 Elkind, Henry Byron .....Worcester. 98 Winter St.
1906 Ellam, Herbert William....Gardner. 29 Parker St.
1914 Eliot, Henry Whitney......Belchertown.
1900 Elliot, Henry Libbey.......Salem. 84 Washington Sq.
1877 Elliot, John Wheelock......Boston. 124 Beacon St.
1903 Elliott, Alfred.............Middleborough. Rock St.
1873 Elliott, Russell Dunson....Boston. 154 Richmond St.
1908 Ellis, Arthur Henry........Greenfield. 317 Federal St.
1905 Ellis, Edward Keith.......Hyde Park (Boston). Office, Boston. 232 Clarendon St
1880 Ellis, Frederic Warren....Monson. Oak St.
1873 Ellis, George Livingstone †1913 Middleborough. 135 Center St.
1915 Ellison, Daniel James......Lowell. 8 Merrimack St.
1894, 1916 Ellison, George Washington Spencer. 158 Main St.
1899 Ellsworth, Samuel Walker.Quincy. Office, Boston. 64 Commonwealth Av.
1899 Ely, Richard Skinner......West Townsend (Townsend).
1913 Ely, Theodore Williams....Allston (Boston). 1126 Commonwealth Av.
1903 Emerson, Benjamin Kendall Worcester. 37 Pearl St.
1873 Emerson, Edward Waldo...Concord. Lowell Road. †1917

1899 Emerson, Ernest Benjamin State Farm (Bridgewater).
1893 Emerson, Francis Patten...Brookline. Office, Boston. 520 Commonwealth Av.
1917 Emerson, Frederick Lincoln Dorchester (Boston). 50 Hancock St.
1903 Emerson, George Edward..South Weymouth (Weymouth). Office, Boston. 543 Boylston St.
1893 Emerson, Herbert Clark....Springfield. 177 State St.
1911 Emerson, Nathaniel Waldo Jamaica Plain (Boston). 118 Forest Hills St.
1916 Emerson, Paul Waldo.....Boston. 86 Bay State Road.
1900 Emerson, William Robie Patten Boston. 657 Boylston St.
1900 Emery, George Edwin......Worcester. 280 Lincoln St.
1909 Emery, William Campbell..Dorchester (Boston). 430 Columbia Road.
1915 Emery, William Edward...Beverly. Beverly Hospital.
1870 Emery, William Henry....Roxbury (Boston). 109 Warwick St.
1905 Emmons, Arthur Brewster, 2d Dover. Office, Boston. 86 Bay State Road.
1915 Emmons, Henry Manning..Jamaica Plain (Boston). 19 Burroughs St.
1904 England, Albert Charles...Pittsfield. 124 North St.
1912 English, Martin Joseph....Boston. 514 Commonwealth Av.
1888 Ensworth, William Howard.East Boston (Boston). 40 Princeton St.
1894 Erb, Theodore Charles.....Boston. 394 Marlboro' St.
1893 Ermentrout, Sallie Justina.Eldridge, Calif.
1881 Ernst, Harold Clarence....Jamaica Plain (Boston). Office, Roxbury (Boston). 240 Longwood Av.
1899 Estabrook, Charles Taylor..Worcester. 390 Main St.
1912 Eustis, Richard Spelman...Boston. 329 Beacon St.
1903 Evans, Albert..............Boston. 409 Marlboro' St.
1904 Evans, Miner Harlow Amos, Jr. Dorchester (Boston). Office, Boston. 248 Newbury St.
1908 Eveleth, Samuel Chester...Marblehead. 137 Washington St.
1899 Everett, Eugene Ellsworth.Boston. 427 Marlboro' St.
1905 Everett, Frederick Luther..Springfield. 10 Chestnut St.
1880 Everett, Oliver Hurd......Worcester. 53 Pearl St.
1865 Everett, Willard Shepard †1905 Newton Upper Falls. 20 Summer St.
1900 Ewing, George Winburn...Middleton. Office, Peabody. 32 Main St.

F

1906 Fabyan, Marshal...........Boston. 379 Commonwealth Av.
1899 Fair, John Francis........East Cambridge (Cambridge). 390 Cambridge St.
1901 Fair, Robert Patrick.......Boston. 481 Beacon St.
1899 Fairbanks, Arthur Willard .Brookline. Office, Boston. 591 Beacon St.
1897 Fales, Alonzo Cartland....Middleton, N. S.
1912 Fallon, Joseph Francis.....Brookline. 1 Kendall St.
1891 Fallon, Michael Francis....Worcester. 390 Main St.
1880 Farlow, John Woodford....Boston. 127 Bay State Road.
1895 Farnham, John Marshall Willoughby Worcester. 28 Pleasant St.
1874 Farr, Edwin Lawson......Brookline. 92 Thorndike St.
1908 Farr, Irvin Harris.........Holyoke. 179 Chestnut St.
1915 Farrar, Lonnie Oliver.....State Farm (Bridgewater).
1894 Farrington, Leander Morton Arlington Heights. 102 Florence Av.
1893 Faulkner, Herbert Kimball.Keene, N. H. 78 West St.
1891 Faulkner, William Edward.Boston. 290 Marlboro' St.
1905 Faunce, Calvin Barstow, Jr.Jamaica Plain (Boston). Office, Boston. 95 Newbury St.
1905 Faxon, Eudora Winifred...Dorchester Center (Boston) State Hosp.
1892 Faxon, Eudora Meade †1912 Franklin. New Ray Block.
1907 Faxon, Nathaniel Wales...Stoughton. 4 Walnut Av.
1907 Faxon, William Otis.......Stoughton. 4 Walnut Av.
1897 Fay, Frank Gleason........Worcester. 390 Main St.
1875 Fay, James Monroe........Northampton. 71 King St.
1911 Fay, Joseph Henry........Melrose. 6 West Emerson St.
1888 Fay, William Eastman.....Brookline. Office, Boston. 366 Commonwealth Av.
1904 Feeley, Charles Philip.....Cambridge. 1039 Mass. Av.
1914 Feeley, Walter Clarence....Cambridge. 885 Mass. Av.
1906 Felch, Carrie Innes.......Boston 1069 Boylston St.
1913 Felch, George Alfred.......Boston. 743 Tremont St.
1906 Felch, Lewis Perley.......Boston 1069 Boylston St.
1912 Fennelly, Daniel John.....Fall River. 52 Linden St.
1903 Fennessey, John Francis...Dorchester (Boston). 15 Adams St
1915 Fenton, Alfred Archibald..Norwood.
1905 Fenwick, George Benson...Chelsea. 24 Gardner St.
1900 1916 Ferguson, Edward Hugh. Mattapan (Boston). 1294 Blue Hill Av.
1901 Ferguson, Robert Henry...East Orange, N. J. 9 North Munn Av.
1903 Fernald, Guy Goodwin.....Concord Junction (Concord). Assabet Av.
1895 Fernald, Walter Elmore....Waverley (Belmont). P. O. Box 344.
1904 Ferrin, William Warren...Haverhill. 77 Emerson St.
1906 Field, Henry Martyn.......Norwood. 784 Washington St.
1904 Field, Martin Thomas......Salem. 23 Winter St.
1900 Finch, George Hardy.......Springfield. 310 Main St.
1907 Finegan, Daniel Joseph....Gloucester. 83 Middle St.
1904 Finkelstein, Harry.........Boston. 342 Hanover St.
1912 Finkelstein, Nathan........Pittsfield. 86 North St.
1911 Finlayson, Alan Daniel....Warren, Pa. State Hosp.
1890 Finn, Edward William.....Dedham. 5 Franklin Sq.
1913 Finnegan, Francis Augustine Fitchburg. 14 Longwood Av.
1913 Finnegan, Philip Joseph...Salem. 92½ Essex St.
1914 Finnerty, Charles William.Somerville. 761 Broadway.
1884 Finnigan, Patrick Joseph..Cambridge. 1412 Cambridge St.
1904 Fischbein, Louis...........Boston. 382 Newbury St.
1897 Fish, Ernest Clifford.......Melrose. 11 Wyoming Av.
1897 Fish, John Euclid.........Canton. Mass. Hospital School.
1904 Fish, Louis.................Fitchburg. 25 Myrtle Av.
1873 Fisher, Chester Irving †1916 New York, N. Y. 1925 7th Av.
1915 Fisher, Gertrude Guild....New York, N. Y. 1925 7th Av.
1902 Fisher, Irving Jewell......West Newton (Newton). 79 Chestnut St.
1910 Fishman, Maurice..........Lowell. 40 Middlesex St.
1888 Fisk, Arthur Lyman.......New York, N. Y. 41 West 50th St.
1886 Fiske, Eustace Lincoln.....Fitchburg. 20 Prichard St.
1891 Fitz, George Wells.........Boston. P. O. address, Peconic, N. Y.
1913 Fitz, Reginald.............Roxbury (Boston). P. B. Brigham Hospital.
1898 Fitzgerald, Clara Pauline..Worcester. 137 Pleasant St.
1892 Fitzgerald, James Bernard.Boston. 393 Mass. Av.
1906 Fitzgerald, John Joseph...Haverhill. 111 Emerson St.
1903 Fitzpatrick, John Joseph...Charlestown (Boston). 50 High St.
1910 Fitz-Simmons, Henry Joseph Jamaica Plain (Boston). Office, Boston. 272 Newbury St.
1902 Flagg, Elisha..............Boston. 199 Commonwealth Av.
1909 Flagg, Harry Howard......Charlestown (Boston). 30 Elm St.
1913 Flaherty. Edward James..Maynard. 44 Main St.
1914 Fleet, William Ernest......Cambridge. 9 Columbia St.
1914 Fleming, Edward Rahn....Medford. 322 Boston Av.
1904 Fleming, Patrick Joseph...Cambridge. 234 Huron Av.
1903 Fleming, Peter Joseph.....Mattapan (Boston). 1258 Blue Hill Av

1902 }
1909 } **Fletcher, Robert Swan**....Oxford. Charlton St.
1893 **Fletcher, Robert Whitney**..South Boston (Boston). 783 Broadway.
1905 **Flett, Penelope McNaughton** Framingham. Box 99.
1882 **Flood, Everett**............Palmer. Monson State Hospital.
1910 **Flournoy, Thomas**.........Pittsfield. 742 North St.
1905 **Floyd, Cleaveland**..........Boston. 246 Marlboro' St.
1893 **Flynn, John Joseph**........Pittsfield. 183 North St.
1902 **Flynn, John Joseph**........Worcester. 10 Grand St.
1916 **Fobes, Howard Edward**...Whitman. 324 Auburn St.
1883 **Fogerty, William Clemmons**.Worcester. 98 Chandler St.
1880 **Fogg, Irving Sylvester**.....Norwood. 767 Washington St.
1913 **Foley, Thomas Brinsley**....Boston. 85 Westland Av.
1894 **Foley, Timothy John**.......Worcester. 28 Portland St.
1910 **Forbes, Alexander**.........Milton. Harland St.
1917 **Foot, Nathan Chandler**....Milton. Canton Av.
1893 **Ford, John Francis**........Roslindale (Boston). 8 Walter St.
1915 **Forhan, Neil Kittredge**....North Billerica (Billerica).
1914 **Forster, John Ferguson Cooke** Holyoke. 277 Suffolk St.
1901 **Forster, Robert William**...Lawrence. 279 Broadway.
1895 **Fosgate, Elmer Gilman**....Ashburnham.
1914 **Foss, George Herbert**......Springfield. 530 Summer St.
1909 **Foss, Ralph Emery**........Peabody. 97 Main St.
1916 **Foster, Arthur Neville**....Dorchester (Boston). 740 Adams St.
1884 **Foster, Charles Chauncy**...Cambridge. 8 Elmwood Av.
1904 **Foster, Ellis Edwin**........New Bedford. 271 Union St.
1883 **Foster, Horace Kendall**....Peabody. 2 Park St.
1907 **Fowler, John Richard**.....Spencer. 143 Main St.
1911 **Fox, Michael Bernard**......Worcester. 6 Coral St.
1887 **Fox, William Yale**.........Taunton. 26 Second St.
1915 **Fraim, Irving William**....Waltham. 860 Main St.
1894 **Frame, Joseph**.............Rockland. 39 Webster St.
1891 **Francis, Carleton Shurtleff**.Brookline. 26 Davis Av.
1887 **Francis, George Hills**......Brookline. 295 Walnut St.
1911 **Frank, Morris**.............Roxbury (Boston). 106 Humboldt Av.
1917 **Frankel, David Israel**......Boston. Mass. Hom. Hosp.
1902 **Franz, Adolph**.............Holyoke. 266 Maple St.
1911 **Fraser, Archibald McKay**..Boston. 69 Newbury St.
1880 **Fraser, John Chisholm**.....East Weymouth. (Weymouth).
1915 **Fraser, Somers**............Boston. 514 Commonwealth Av.
1913 **Fraser, William Leslie**.....Lynn. 812 Summer St.
1915 **Frasier, Joseph Anthony**....New Bedford. 265 Main St.
1911 **Frawley, William Thomas**..Pittsfield. 184 North St.
1905 **Freedman, Louis Mark**....Brookline. Office, Boston. 419 Boylston St.
1894 **Freeman, Franklin Willard**..Lynnfield. P. O. Wakefield, R. F. D.
1916 **Fregau, Aime Napoleon**...Fitchburg. 44 Prichard St.
1900 **French, Charles Ephraim**..Lowell. 9 Central St.
1887 **French, Charles Lindol**....Clinton. 271 High St.
1893 **French, George Henry**.....Winthrop. 300 Pleasant St.
1892 **French, John Marshall**.....Milford. 2 South Main St.
1911 **French, Ralph Winward**...Fall River. 151 Rock St.
1914 **Friedman, Benjamin**.......Boston. 35 Allen St.
1916 **Friedman, Eli**.............Boston. 745 Mass. Av.
1901 **Friedman, Leo Victor**......Newton Center. Office, Boston. 425 Marlboro' St.
1910 **Friedman, Nathan**.........Boston. 1038 Washington St.
1897 **Frost, Edward Clayton**....Campello (Brockton). 68 Chestnut St.
1906 **Frothingham, Channing, Jr.**.Boston. 395 Marlboro' St.
1887 **Frye, Edmund Bailey**......Boston. 21 Chestnut St.
1909 **Fuller, Andrew Howard**....Cushman (Amherst).
1903 **Fuller, Charles Benjamin**..Waltham. 826 Main St.
1890 **Fuller, Daniel Hunt**.......Philadelphia, Pa. 49th and Market Sts.
1907 **Fuller, Ernest Page**........Lawrence. 301 Essex St.
1894 **Fuller, Frederick Henry**....Walpole.
1892 **Fuller, James Robert**......Andover. 68 Central St.
1915 **Fuller, Solomon Carter**....Westborough. State Hosp.
1898 **Fullerton, Walter Wilson**..Brockton. 106 Main St.
1911 **Funnell, Wilfred Goldwin**..Wollaston (Quincy). Office, Boston. 156 Huntington Av.

G

1905 **Gabler, George Lewis**......Holyoke. 149 Chestnut St.
1917 **Gaetani, Arthur Leonard**..Dorchester (Boston). 23 East St.
1905 **Gafney, Harry Dabol**......Ware. 45 Main St.
1909 **Gage, Arthur Tenney**......Melrose Highl'ds (Melrose). 250 Franklin St.
1906 **Gage, Fred Leon**...........Lowell. 9 Central St.
1886 **Gage, Homer**..............Worcester. 72 Pearl St.
1884 **Gage, James Arthur**.......Lowell. 64 Central St.
1907 **Gahan, Patrick Francis**....Medford. 19 Washington St.
1891 **Gale, George Washington**...East Saugus (Saugus). †1904 68 Lincoln Av.
1901 **Gale, Harold Adams**.......Winchester. Office, Boston. 111 Newbury St.
1906 **Gallagher, John Henry Connaughton** Chicopee. 105 Center St.
1912 **Gallagher, Nicholas Ambrose** Malden. 221 Highland Av.
1907 **Gallagher, Thomas Morton**.Newton. 34 Channing St.
1906 **Galligan, Edward Joseph**...Taunton. 10 North Pleasant St.
1882 **Galligan, Eugene Thomas**..Roxbury (Boston). 84 Warren St.
1888 **Gallison, Ambrose John**....Franklin. 259 Dean Av.
1910 **Gallison, James Murry**.....Boston. 49 Hereford St.
1893 **Gallivan, William Joseph**..South Boston (Boston). 743 Broadway.
1883 **Galloupe, Charles William**.Boston. 188 Commonwealth Av.
1904 **Galvin, Augustus Hughes**..Springfield. 4 Chestnut St.
1901 **Galvin, William**...........Blackinton (Williamstown).
1887 **Gannett, William Whitworth** Boston. 274 Marlboro' St.
1917 **Garrick, Nathan Henry**...Cambridge. 11 Story St.
1917 **Garrett, Frank Steele**......Chelsea. 242 Washington Av.
1903 **Gardner, Archibald Robert** .Lowell. 64 Central St.
1881 **Gardner, Clarence Rhodolphus** †1916 Northampton. 78 Main St.
1912 **Gardner, Edwin Daniels**...New Bedford. 7 North Orchard St.
1900 **Gardner, Harrie Milton**....Cambridge. 128 Magazine St.
1917 **Garbelnick, David Abraham** Boston. Mass. Hom. Hosp.
1913 **Garipay, Ellsworth Peter**..Lynn. 147 Franklin St.
1875 **Garland, Albert Stone** †1908 Gloucester. 18 Pleasant St.
1916 **Garland, Frederick Eugene** Wellesley Hills (Wellesley). Office, Boston. 483 Beacon St.
1874 **Garland, George Minot**.....Boston. 227 Newbury St.
1905 **Garland, Roy**..............Gloucester. 17 Pleasant St.
1895 **Gates, Ernest A.**...........Springfield. 49 North Main St.
1899 **Gavin, John Harrison**......Roxbury (Boston). 346 Dudley St.
1905 **Gay, Clarence Bertram**....Fitchburg. 47 Day St.
1903 **Gay, Fritz Walter**......... Malden. 105 Salem St.
1868 **Gay, George Washington**...Chestnut Hill (Newton). Office, Boston. 665 Boylston St.
1917 **Gay, William Madison**....Sharon. Summit Av.
1914 **Gaylord, James Frederick**..Springfield. 789 State St.
1902 **Généreux, Joseph Olivier**...Webster. 18 Main St.
1916 **Gennert, Jacob**............New Bedford. 1105 Acushnet Av.
1907 **George, Arial Wellington**..Boston. 43 Bay State Rd.
1897 **George, Arthur Phillips**....Haverhill. 143 Main St.
1908 **George, Frank William**....Worcester. 6 High St.

1908 George, Leslie Handlin.....Bradford (Haverhill). 70 Main St.
1911 Gerber, Isaac..............Providence, R. I. 347 Thayer St.
1901 Germain, Harry Homer....Boston. 43 Bay State Rd.
1882 Gerould, Joseph Bowditch..North Attleborough. 34 High St.
1896, 1913 Gerstein, Maurice........Roxbury (Boston). 493 Warren St.
1915 Gervais, Harriet Marion...Brooklyn, N. Y. 191 Ryerson St.
1885 Getchell, Albert Colby.....Worcester. 6 Linden St.
1912 Ghoreyeb, Albert Alphonso Wood In France.
1883 Gibbs, Locero Jackson †1915.....Chicopee Falls (Chicopee). 33 Broadway
1917 Gibby, Harold James......Worcester. 13 Elm St.
1907 Giblin, Francis Joseph.....Dorchester (Boston). 33 Adams St.
1909 Giddings, Harold Girard...Allston (Boston). Office, Boston. 90 Exeter St.
1869 Gifford, Benjamin Dods †1913 Chatham. Cross St.
1886 Gifford, John Henry.......Fall River. 320 Rock St.
1908 Giguere, Alfred Joseph....Lowell. 777 Merrimack St.
1887 Gilbert, John †1916..............Fall River. 254 Locust St.
1898 Gilbert, Louis Whitmore...Brookline. 1470 Beacon St.
1915 Gilchrist, John Milton.....Springfield. 52 High St.
1906 Gile, Frank Herbert, Jr....Braintree. 420 Washington St.
1892 Gile, John Morton.........Hanover, N. H. 1 Maynard St.
1914 Gilfillan, Donald Robert...Worcester. State Hospital.
1905 Gillis, John Ewen.........West Somerville (Somerville). 1109 Broadway.
1906 Gilman, Charles Sleeper...Boston. 833 Beacon St.
1909 Gilman, Florence..........Northampton. 33 Elm St.
1887 Gilman, Warren Randall...Worcester. 10 Oxford St.
1906 Gilpatrick, Roy Hawkes....Boston. 1069 Boylston St.
1878 Ginn, David Richard......Dennisport (Dennis).
1917 Ginsburgh, Nathan Harry.Brockton. Brockton Hosp.
1906 Giroux, Charles............Three Rivers (Palmer).
1906 Glass, James..............Framingham. 61 Concord St.
1896 Glendenning, Robert Thompson Manchester. 8 Church St.
1915 Glidden, Edson William, Jr. Lakeville. State Sanatorium.
1912 Glunts, David.............Roxbury (Boston). 165 Harold St.
1898 Goddard, Henry Edward...Brockton. 21 Goddard Rd.
1906 Goddard, Samuel Warren..Brockton. 21 Goddard Rd.
1905 Goddu, Louis Adalore Oliver Boston. 510 Commonwealth Av.
1914 Godfrey, Henry White.....Auburndale (Newton). 14 Hancock St.
1901 Godfrey, Joseph Witter....Swampscott. Office, Lynn. 209 Union St.
1904 Godfrey, Thomas Francis..Springfield. 104 Union St.
1900 Golden, Lazarus...........Boston. 99 Green St.
1906 Goldsbury, Paul Williams..Warwick.
1888 Goldthwait, Joel Ernest....Boston. 372 Marlboro' St.
1916 Golob, Meyer.............Chelsea. 270 Chestnut St.
1916 Golub, Jacob Joshua......Dorchester (Boston). 857 Blue Hill Av.
1906 Good, Frederick Leo.......Brookline. Office, Boston. 95 Newbury St.
1892 Goodale, Joseph Lincoln...Boston. 258 Beacon St.
1904 Goodall, Harry Winfred...Boston. 205 Beacon St.
1881 Goodell, George Zina......Salem. 5 Williams St.
1906 Goodell, William...........Springfield. 6 Chestnut St.
1890 Goodman, Samuel..........Roxbury (Boston). 148 Townsend St.
1902 Goodridge, Frederick James Cambridge. 5 Appian Way
1892 Goodwin, James Joseph....Clinton. 202 Church St.
1861, 1885 Goodwin, Richard James Plummer †1903 Malden. 481 Pleasant St.
1871 Gordon, John Alexander...Quincy. 1200 Hancock St.
1917 Gordon, Samuel Finley...Dorchester (Boston). State Hospital.
1896 Gordon, Stephen Masury...Fall River. 318 Prospect St.
1905, 1910 Gorham, George Hartley West Roxbury (Boston). 81 Corey St.
1915 Gosline, Harold Inman.....Trenton, N. J. State Hospital.
1896 Goss, Arthur Vincent......Taunton. State Hospital.
1869 Goss, Francis Webster.....Sacramento, Calif. 1014 40th. St.
1916 Gould, Carlisle Royal.....Salem. 208 Lafayette St.
1907 Gould, Chester Harlow....Braintree. 400 Washington St.
1888 Gould, Clarke Storer.......Norwood. 486 Washington St.
1899 Grady, Patrick Anthony Salmon Clinton. 104 School St.
1913 Grady, Thomas Francis....Lynn. 540 Summer St.
1915 Grady, Thomas Henry.....Clinton. 76 Walnut St.
1873 Graham, Douglas..........Brookline. Office, Boston. Hotel Brunswick
1911 Grainger, Edward John....Winthrop. 304 Winthrop St.
1882 Grainger, William Henry †1916..East Boston (Boston). 619 Bennington St.
1901 Grandison, Wilfred George.Charlestown (Boston). 65 High St.
1903 Granger, Frank Butler.....Boston. 591 Beacon St.
1882 Granger, Frank Clark......Randolph.
1893 Granger, Karle Henry.....South Weymouth (Weymouth).
1895 Grant, James Henry.......Lynn. 148 South Common St.
1896 Grant, William Herbert....Boston. 543 Boylston St.
1904 Grant, William Victor.....Lawrence. 253 Essex St.
1916 Grant, Winifred Margaret.Worcester. Memorial Hospital.
1905 Graves, Benjamin Augustus Dorchester (Boston). 178 Bowdoin St.
1904 Graves, Robert John.......Concord, N. H. 3 North State St.
1901 Graves, William Phillips...Boston. 244 Marlboro' St.
1901 Gray, Alice Maud.........Roxbury (Boston). 2 St. James St.
1896 Gray, Elizabeth Taylor....Roxbury (Boston). 2 St. James St.
1891 Gray, George Henry.......Lynn. 11 Lynn Shore Drive.
1915 Gray, Horace............Boston. 290 Commonwealth Ave.
1903, 1906 Gray, Hugh Barr........Boston. 41 Waltham St.
1916 Greany, William Francis..Holyoke. 71 Lincoln St.
1914 Greeley, Hugh Payne......Waukesha, Wis.
1877 Green, Charles Montraville.Boston. 78 Marlboro' St.
1868 Green, John Orne †1912 Boston. 267 Newbury St.
1917 Green, Milo Chester......Boston. Mass. Hom. Hosp.
1906 Green, Robert Montraville..Boston. 496 Commonwealth Ave.
1855 Green, Samuel Abbott †1901 Boston. 1154 Boylston St.
1901 Greene, Daniel Crosby, Jr.. (Boston). 483 Beacon St.
1915 Greene, Edward Chace....Northampton. State Hospital.
1887 Greene, Edward Miller.....Boston. 45 Chestnut St.
1915 Greene, Jeremiah AugustineCambridge. 2236 Mass. Av.
1904 Greene, Ransom Alphonso..Palmer. Monson State Hospital.
1887 Greene, Ray Woodville.....Worcester. 21 West St.
1895 Greene, Thomas Francis...Roxbury (Boston). 322 Warren St.
1896 Greene, William Henry....Roxbury (Boston). 322 Warren St.
1871 Greenleaf, John Ruggles †1908 Gardner. 42 Chestnut St.
1900 Greenough, Clara Mary....Greenfield. 17½ Federal St.
1898 Greenough, Robert Battey..Brookline. Office, Boston. 8 Marlboro' St.
1888 Greenwood, Allen..........Wellesley Hills. Office, Boston. 101 Newbury St.

1905 Greenwood, Arthur Moses..Marblehead. 69 Pleasant St.
1881 Greenwood, Sewell Elliot..Templeton.
1907 Gregg, Donald.............Wellesley. 113 Wellesley Av.
1884 Griffin, Arthur George.....Malden. 195 Pleasant St.
1903 Griffin, Walter Alden......Sharon.
1904 Grimes, Loring.............Swampscott. 129 Burrill St.
1896 Griswold, Merton Lyman...Uxbridge. South Main St.
1915 Grocshinsky, Herman......New Bedford. 54 Russell St.
1916 Grogan, Margaret VictorineBoston. 175 Dartmouth St.
1893 Grouard, John Shackford..Nantucket.
1904 Grover, Arthur Leon.......Iowa City, Iowa. College of Medicine.
1914 Grover, Joseph Isaac......Mattapan (Boston). Office, Boston, 272 Newbury St.
1883 Gruver, Samuel James.. .Brockton. 106 Main St. †1917
1912 Guild, Bruno Thurber.....Shelburne Falls (Shelburne).
1887 Guild, Edgar Hunt.........Springfield. 137½ State St.
1910 Guild, Edward Frank......Chelsea. 9 Crescent Av.
1909 Guild, Frederick Washburn.Grafton. South St.
1896 Guild, Thomas Ezra.......Mattapan (Boston). 1550 Blue Hill Av.
1916 Gunning, Thomas Francis.Fall River. 238 No. Main St.
1914 Gunter, Fred Clarke.......Somerville. Office, Boston. 483 Beacon St.
1913 Guthrie, Andrew Doherty..Medford. 407 Salem St.
1917 Guy, Walter Bryant......Roxbury (Boston). 277 Warren St.
1914 Gwinnell, Alfred Weston...Brighton (Boston). 558 Washington St.
1914 Gwynne, Samuel Carlton...Worcester. 346 Grafton St.

H

1911 Hagerty, Joseph James....Norwood. 699 Washington St.
1911 Hagopian, Levon George...Lynn. 26 South Common St.
1885 Hahn, Albert Johann......Pattenburg. N. J.
1911 Haigh, Gilbert William.... Worcester. 297 Pleasant St.
1900 Haines, Ignatius...........Brookline. Office, Boston. 178 Devonshire St. Room 615.
1914 Haley, William Thomas....Marblehead. Office, Boston. 156 Huntington Av.
1915 Hall, Charles Francis Adams Newburyport. 210 High St.
1911 Hall, Gardner Wells.......Boston. 475 Beacon St.
1877 Hall, Harry Porter.........Leominster. 70 West St.
1896 Hall, Herbert James.......Marblehead. Devereux Mansion.
1903 Hall, John Baptiste, Jr....Roxbury (Boston). 60 Windsor St.
1902 Hall, Walter Davis........Port Clyde, Me.
1885 Hall, William Dudley......Boston. 416 Marlboro' St.
1897 Hallett, Edward Bangs....Gloucester. 63 Middle St.
1906 Halligan, Edward Maurice.Reading. 18 Salem St.
1910 Hallisey, Joseph Edward...Dorchester (Boston). 467 Columbia Road.
1881 Halloran, Michael Joseph...Worcester. 42 Green St.
1890 Halpin, Andrew James.....Lowell. 22 Central St.
1906 Halsall, Mary Elizabeth... Winthrop. 587 Pleasant St.
1916 Halton, Edward Peter.....Springfield. 387 Main St.
1912 Hamblen, Edward Everett.Bedford.
1912 Hamblen, Howard..........Maynard. Walnut St.
1914 Hamblet, Mary Lucia......Wallum, R. I.
1908 Hamilton, Albert John Adams Boston. 69 Newbury St.
1899 Hamilton, Annie Lee.......Boston. 141 Newbury St.
1912 Hamilton, Burton Everett..West Roxbury (Boston) 152 Park St.
1905 Hamilton, Robert DeLancey Newburyport. 220 High St.
1906 Hammond, Charles.........Hanover. Washington St.
1893 Hammond, Philip..........Winchester. Office, Boston. 483 Beacon St.
1899 Hammond, William John...Dorchester (Boston). 405 Washington St.
1875 Hammond, William Penn..Charlestown (Boston). 47 Monument Sq.
1914 Hampson, Nishan M.,...... Rutland. State Sanatorium.
1916 Hand, Edward Patrick Holyoke. 115 Suffolk St.
1911 Handy, Harrie Delmar.....Harwich. 18 Parallel St.
1899 Handy, Harry Tucker......Scituate Center.
1895 Hanley, Francis Joseph....Whitman. 21 Whitman Av.
1895 1911 Hanley, John Joseph....Motherwell, Scotland. 56 Brandon St.
1914 Hanscom, Ridgely Fernald Newton Center (Newton). 59 Dalton Road.
1901 Hanson, Justus Greeley....Northampton. 219 Elm St.
1905 Hanson, William Clinton.. Belmont. 395 Belmont St.
1917 Hanson, William Greene..Everett. 27 Norwood St.
1907 Hanson, William Thomas..Tewksbury. State Infirmary.
1901 Hapgood, Lyman Sawin....Cambridge. 6 Garden St.
1890 Harding, George Franklin..Boston. 419 Boylston St.
1912 Hardwick, Everett Vinton.Dorchester (Boston). 43 Algonquin St.
1906 Hardwick, Sydney Curtis..Quincy. 159 Elm St.
1888 Hare, Charles Henry.......Boston. 483 Beacon St.
1901 Harkins, John Francis.....Worcester. 18 Franklin St.
1915 Harkins, William Joseph, Jr.Quincy. 108 Goff St.
1890 Harlow, Corydon Webster..Melrose Highl'ds (Melrose). 300 Franklin St.
1908 Harmer, Torr Wagner.....Boston. 496 Commonwealth Av.
1901 Harriman, Charles Henry..Whitinsville (Northbridge). Church St.
1903 Harriman, Cora Elizabeth..Framingham. 15 High St.
1902 Harriman, David Eugene..Springfield. 21 Besse Pl.
1903 Harriman, Perley..........Lynn. 290 Summer St.
1907 Harrington, Clifton Ward..Everett. 545 Broadway.
1912 Harrington, Daniel James..Dorchester (Boston). 975 Dorchester Av.
1884 Harrington, Harriet Louise. Dorchester (Boston). 20 Monadnock St.
1903 Harrington, Michael William Indian Orchard (Springfield). Oak St.
1889 Harrington, Thomas Francis Boston. 310 Commonwealth Av.
1895 Harris, Arthur Eugene.....Lynn. 17 Chestnut St.
1898 Harris, Charles Edward....Hyannis (Barnstable). Main St.
1915 Harris, Lorne-Wilborne....Cliftondale (Saugus). 257 Lincoln Av.
1900 Harris, William DeBlois...Lynn. 96 South Common St.
1908 Harrison, Columbus William Boston. 35 Common St.
1906 Harrison, Henry...........Boston. 153 Huntington Av.
1884 Harrower, David....... Worcester. 13 Elm St.
1896 Hart, George Fred.........Webster. 17 Church St.
1900 Hart, Henry Brown........Yarmouthport (Yarmouth).
1901 Hart, Joseph Storer........South Lincoln (Lincoln).
1906 Hartman, Gustave.........Lynn. 177 North Common St.
1906 Hartnett, Edward Daniel...East Boston (Boston). 256 Bennington St.
1917 Hartnett, Edward Henry Lewis Dorchester (Boston). 327 Geneva Av.
1911 Hartnett, John Henry..... Worcester. 9 Elm St.
1898 Hartung, Harry Hall......Boston. 224 Huntington Av.
1901 Hartwell, Arthur Spear....Norwood. 90 Winter St.
1902 Hartwell, Harry Fairbanks.Boston. Mass. Gen. Hospital.
1905 Hartwell, John Bryant.... Colorado Springs, Colo. 1121 North Tejon St.
1901 Hartwell, William Winn...Malden. 61 Washington St.
1898 Harvey, William Wirt.....Boston. 114 Fenway.
1893 Haskell, Henry Hill.......Auburndale (Newton). Office, Boston. 29 Commonwealth Av.
1891 Haskell, Nelson Cary......Amherst. 50 Main St.
1914 Haskins, Frank Eugene....Boston. 204 Huntington Av.

1881	Haskins, Solomon Foot	Cotuit (Barnstable). Ocean View Av.
1913	Haslam, Frank Alden	Allston (Boston). 1379 Commonwealth Av.
1893	Hassett, John Joseph	Lee. Main St.
1911	Hassett, Leonard Watson	Lynn. 586 Western Av.
1916	Hassman, David Morris	Roxbury (Boston). 300 Longwood Av.
1882	Hastings, Judson Worthington	Feeding Hills (Agawam).
1894	Hastings, Robert Worthington	Brookline. 45 Kilsyth Rd.
1907	Hatch, Ralph Augustus	Brookline. Office, Boston. 390 Commonwealth Av.
1887	Hatchett, William Josephus	Somerville. 28 Arlington St.
1899	Hathaway, John Gael	New Bedford. 388 County St.
1904	Haviland, Walter Childs	Worcester. 11 Elm St.
1900	Hawes, Alfred Taylor	Lynn. 85 North Common St.
1887	Hawes, Edward Everett	Barnstable. Office, Hyannis. Railroad Av.
1903	Hawes, John Bromham, 2nd	Boston. 29 Gloucester St.
1908	Hawkins, Henry	Dorchester (Boston). Office, Boston. 394 Marlboro St.
1898	Hayes, Albert Edwin	Providence, R. I. 128 Broad St.
1867	Hayes, Charles Cogswell †1890	Faribault, Minn. Brunswick Hotel.
1899	Hayes, Frederick Legro	Brookline. 12 Verndale St.
1905	Hayes, Justin Edward	Northampton. 277 Main St.
1886 1893	Hayes, Justin Gideon	Williamsburg. Main St.
1870	Hayes, Stephen William	New Bedford. 61 Orchard St.
1914	Hayes, William Francis	Beverly. 377 Cabot St.
1917	Haywood, Ralph Winson	Salem, 51 Columbus Av.
1869	Hazleton, Isaac Hills †1906	Wellesley Hills (Wellesley).
1900	Heald, Charles Gerry	Pepperell. Main St.
1901	Healy, Daniel Laurence	Framingham. 54 Concord St.
1899	Healy, Thomas Raymond	Newburyport. 12 Charter St.
1917	Healy, William	Boston. 40 Court St.
1915	Hearn, Walter Lawrence	Lynn. 293 Euclid Av.
1883	Heath, Joseph Webster	Wakefield. 8 Avon St.
1900	Heaton, Thomas Henry	Cambridge. 315 Broadway.
1874 1894	Hebbard, Ellery Cola	Boston. 122 Huntington Av.
1905	Hedin, Carl Johan	West Pownal, Me. Maine School for Feeble-Minded.
1906	Heffernan, David Aloysius	Allston (Boston). 69 Newbury St.
1911	Hegerty, Joseph Gordon	Boston. 514 Commonwealth Av.
1917	Heininger, Arthur Gustav	Gardner. 66 Parker St.
1912	Hemeon, Frederick Chipman	Dorchester (Boston). 9 Standish St.
1907	Henderson, Charles Russell	Reading. 74 Woburn St.
1911	Henderson, Francis Freeman	Boston. 39 Newbury St.
1902	Henderson, George Dallas	Holyoke. 276 Maple St.
1912	Hendricks, Henning Vitalis	Traverse City, Mich. State Hospital.
1910	Hennelly, Thomas Patrick	Pittsfield. 184 North St.
1912	Hennessey, Thomas Francis	Lynn. 22 Mall St.
1909	Hennessey, William Warren	Salem. 333 Essex St.
1885	Henry, John Goodrich	Winchendon. 15 Pleasant St.
1910	Hepburn, James Joseph	Boston. 536 Commonwealth Av.
1917	Herbert, Edward	Fall River. 140 Purchase St.
1911	Hermann, Otto John	Roxbury (Boston). Office, Boston. 522 Commonwealth Av.
1885	Herrick, Joseph Thomas	Springfield. 684 State St.
1915	Hersam, Norman Paul	Stoneham. 20 Hersam St.
1880	Hersey, Freeman Clarke †1914	Boston. 499 Beacon St.
1911	Hersey, Harold Waters	Winchester. Office, Boston. Mass. Gen. Hosp.
1896	Hewes, Henry Fox	Boston. 416 Marlboro' St.
1882	Hewins, Parke Woodbury	Wellesley Hills. Office, Boston. 20 Beacon St.
1897	Hewitt, Clarence Elbert	Springfield. 796 State St.
1902	Hewitt, William Oakes	Attleborough. 34 Sanford St.
1911	Heydemann, Martin	Brookline. Office, Boston. 510 Commonwealth Av.
1903	Hickey, John Joseph	Peabody. 40 Main St.
1906	Hicks, George Henry	Fall River 1973 South Main St.
1908	Higginbotham, Fred Augustus	Watertown. 98 Mt. Auburn St.
1893	Higgins, Frank Albert	Boston. 384 Commonwealth Av.
1914	Higgins, George Vincent	Randolph, Warren St.
1894	Higgins, James Haydyn	Marstons Mills (Barnstable).
1868	Hildreth, John Lewis †1909	Winchester. 55 Fletcher St.
1878	Hill, Edgar Dwight	Plymouth. 27 Court St.
1917	Hill, Ernest Linwood	Millis. Plain St.
1896	Hill, George Hillard	Worcester. 15 High St.
1904	Hill, George Jackson	Beverly. 548 Cabot St.
1901	Hill, George Sumner	Boston. 295 Beacon St.
1886	Hill, Ira Clark	Springfield. 137½ State St.
1913	Hill, Lawrence Richardson	Concord, N. H. 48 Pleasant St.
1914	Hill, Lewis Webb	Jamaica Plain (Boston). Office, Boston. 99 Commonwealth Av.
1904	Hill, T.(homas) Chittenden	Boston. 384 Commonwealth Av.
1903	Hillard, James Pearse	Springfield. 354 Walnut St.
1916	Hilliard, William David	Northampton. 14 Center St.
1901	Hills, Charles Everett	South Natick (Natick).
1895 1898	Hills, Frederick Lyman	Bangor, Me. Eastern Maine Hospital.
1874	Hills, William Barker †1915	Brookline. Office, Boston. 19 Pearl St.
1914	Hilton, John Joseph Herron	Lawrence. 336 Haverhill St.
1915	Hiltpold, Werner	Easthampton. 1 Clark St.
1905	Hinchliffe, Frederick	Cohasset. Main St.
1905	Hinchey, Richard	Waltham. 17 Pine St.
1899	Hinckley, James William	Brookline. Office, Boston. 419 Boylston St.
1911	Hinds, Robert Watson	Buffalo, N. Y. 492 Elmwood Av.
1913	Hinton, William Augustus	Canton. Dedham St.
1889	Hipkiss, George	Allston (Boston). 184 Harvard Av.
1909	Hirsch, Henry Leon	Springfield. 172 Main St.
1882 1911	Hitchcock, Edward	Boston. 32 State House.
1890	Hitchcock, Henry Russell	Plymouth. 36 Main St.
1895	Hitchcock, John Sawyer	Northampton. 160 Main St.
1900	Hixon, Edwin Colfax	Brookline. Office, Boston. 419 Boylston St.
1913	Hoberman, Samuel	Malden. 217 Bryant St.
1907	Hoch, Theodore Augustus	Waverley (Belmont). McLean Hospital.
1882	Hodgdon, Andrew Hall	Dedham. 110 Maple Pl.
1917	Hodgdon, Frank Wellington, Jr.	Boston. City Hospital.
1903	Hodgdon, Ralph Franklin	Somerville. 16 Westwood Road.
1894	Hodges, Almon Danforth	Roxbury (Boston). The Warren.
1916	Hodgkins, Edward Marshall	Boston. 24 McLean St.
1902	Hodskins, Morgan Brewster	Palmer. Monson State Hospital.
1898	Hogan, Joseph Ambrose	Lawrence. 537 Essex St.
1893	Hogner, Richard Per Gustaf	Boston. 365 Mass. Av.
1907	Hoit, Henry Ambrose	Pasadena, Calif. 1110 No. Michigan Av.
1906	Hoitt, Charles Lewis	Lynn. 83 Franklin St.
1883	Hoitt, Eugene Gorham	Belmont. 98 Payson Road.

1902 Holbrook, Bradbury........Waltham. 802 Main St.
1910 Holbrook, Charles Albert...Haverhill. 50 Merrimack St.
1882 Holden, Charles Sumner....Attleborough. 24 South Main St.
1889 Holden, Eugene Martin....New York, N. Y. 1 Madison Av.
1883 Holden, William Daniel....Haverhill. 74 Emerson St.
1897 Holland, Hubert Thomas..Jamaica Plain (Boston). 423 Center St.
1908 Hollings, Byam............Boston. Mass. Gen. Hosp.
1903 Holmberg, Carl Lester Magnus.....Campello (Brockton). 1106 Main St.
1909 Holmes, Arthur Brewster..Kingston. Main St.
1913 Holmes, Daniel Henry.....Middleborough. 15 School St.
1897 Holmes, Edgar Miller......Boston. 531 Beacon St.
1906 Holmes, George Winslow...Newton. Office, Boston. Mass. Gen. Hospital.
1900 Holmes, Harry Bigelow....Adams. 37 Park St.
1902 Holmes, Howard Fowler...Georgetown. 18 Pond St.
1910 Holmes, John Franklin.....Manchester, N. H. 951 Elm St.
1895 Holmes, May Salona......Worcester. Belmont Hospital.
1907 Holt, Charles Herbert......Pawtucket, R. I. Masonic Bldg.
1883 Holyoke, Frank............Holyoke. 441 High St.
1914 Holzer, William Francis...Winchendon. 35 School St.
1916 Holzman, Joseph..........Roxbury (Boston). 1 Elm Hill Av.
1904 Homans, John.............Brookline. 559 Chestnut Hill Av.
1911 Honeij, James Albert.......New Haven, Conn. New Haven Hospital.
1897 Hood, Mary Gould †1915 Brookline. 73 Longwood Av.
1900 Hopkins, Bertrand Hiram..Ayer. Washington St.
1895 Hopkins, Frederick Eugene.Springfield. 25 Harrison Av.
1912 Hopkins, John Wilson.....Washington, D. C. Washington Sanatorium.
1917 Hopkins, Ralph Harrison.Marion. 4 Cottage St.
1911 Hopkins, William Thorpe..Lynn. 7 Atlantic St.
1906 Hopkinson, George.........Cambridge. Office, Boston. 419 Boylston St.
1906 Horne, Lester Wallace.....Fairhaven. 32 Union St.
1914 Hornor, Albert Aurelius...Boston. 86 Bay State Rd.
1915 Horrax, Gilbert...........Roxbury (Boston). P. B. Brigham Hospital.
1914 Horsman, Hiram Lionel...Worcester. Grafton State Hosp.
1906 Hosley, Walter Alexis.....Springfield. 145 Clarendon St.
1885 Hough, Garry de Nerville..New Bedford. 542 County St.
1914 Houghton, Niedhard Hahnemann Boston. 220 Clarendon St.
1906 Houghton, Richard Henry..East Boston (Boston). 308 Sumner St.
1882 Houston, John Alexander..Northampton. State Hospital.
1908 Howard, Alonzo Gale......Boston. 636 Beacon St.
1882 Howard, Amasa...........Chelmsford.
1911 Howard, Arthur Allison....Brookline. Office, Boston. 520 Commonwealth Av.
1917 Howard, Charles Tilden...Boston. 405 Marlboro' St.
1898 Howard, Eugene Henry....Pittsfield. 246 North St.
1901 Howard, Frederic Hollis...Williamstown. 50 Spring St.
1917 Howard, Harvey James...Boston. 233 Charles St.
1885 Howard, Herbert Burr.....Roxbury (Boston). Peter Bent Brigham Hospital.
1916 Howard, Herbert Handy...Boston. 24 Marlboro' St.
1899 Howard, Joseph Francis...Lawrence. 6 Avon St.
1885 Howard, Margaret Emily Pagelsen Roxbury (Boston). Peter Bent Brigham Hospital.
1904 Howe, Harry Newell.......Greenfield. 4 Bank Row.
1899 Howe, Joseph Dimock.....Pittsfield. 42 North St.
1876 Howe, Octavius Thorndike.Boston. 154 Beacon St.
1885 Howe, Oliver Hunt........Cohasset. Main St.
1898 Howe, Walter Clarke......Boston. 303 Beacon St.
1917 Howe, Winfred Lewis....Everett. 357 Broadway.
1900 Howell, William Wescott..West Roxbury. Office, Boston. 279 Clarendon St.
1912 Howes, Frank Miller......New Bedford. 9 North Orchard St.
1917 Howes, Willard Boyden...Rutland. State Sanatorium.
1909 Howland, Charles Abel.....Washington, D. C. 1302 R. St. N. W.
1908 Howland, George Lewis....Jamaica Plain (Boston). 6 Beaufort Road.
1897 Howland, Joseph Briggs....Boston. Mass. Gen. Hosp.
1915 Hoyt, Edward Malcom....Georgetown. 38 Main St.
1911 Hoyt, Perley Adelbert.....Ludlow. North St.
1890 Hoyt, Walter Scott........Waltham. 104 Crescent St.
1909 Hubbard, Edward Dana....Gloucester. 96 Middle St.
1883 Hubbard, Frank Allen.....Taunton. 157 High St.
1901 Hubbard, George William..Springfield. 327 State St.
1896 Hubbard, Joshua Clapp....Boston. 86 Bay State Rd.
1881 Hubbard, Josiah Clark.....Holyoke. 243 Maple St.
1894 Hubbard, Osmon Huntley..Gilsum, N. H.
1907 Hubbell, Adelbert Merton..Haverhill. 22 Merrimack St.
1895 } 1914 } Hudnut, Frank Parker..New Bedford. 156 William St.
1911 Hudnut, Paul Albert.......Northampton. 65 New South St.
1917 Hudson, Charles Bibb.....East Boston (Boston). **Relief Station**
1916 Hughes, Edgar Hamill....Northampton. 277 Main St.
1917 Hughes, George Frederick.Somerville. 143 Cross St.
1896 Hughes, Laura Ann Cleophas Boston. 98 Huntington Av.
1906 Hughes, Patrick James....Lawrence. 21 Brookfield St.
1916 Hunt, Albert Foster.......Bridgewater. 28 School St.
1905 Hunt, Alice Elizabeth Palmer Holyoke. 364 Maple St.
1897 Hunt, Daniel Lawrence....Boston. 293 Commonwealth Av.
1903 Hunt, Ernest Leroi........Worcester. 771 Main St.
1902 Hunt, George Eddy........Holyoke. 364 Maple St.
1902 Hunt, George Pratt........Pittsfield. 34 Fenn St.
1911 Hunt, Harold Otis.........Newtonville (Newton). 424 Newtonville Av.
1915 Hunt, William Elliot......Bridgewater. 120 Main St.
1878 Hunt, William Otis........Newtonville (Newton) 424 Newtonville Av.
1904 Hunt, Wilson Eugene......Malden. 88 Summer St.
1905 Hunter, Norman McLeod...Hudson. 20 Lincoln St.
1888 Hunting, Nathaniel Stevens.Quincy. 1136 Hancock St.
1908 Huntington, James Lincoln.Boston. 8 Gloucester St.
1876 Huntress, Leonard †1914 Lowell. 46 Fort Hill Av.
1900 Hurd, Albert Gordon.......Millbury.
1899 Hurd, Randolph Campbell..Newburyport. 224 High St.
1888 Hurley, Daniel Bartholomew East Boston (Boston). 42 Chelsea St.
1914 Hurley, Daniel Joseph.....Charlestown (Boston). 24 Monument Av.
1906 Hurley, Edward Daniel....South Boston (Boston). Office, Boston. 419 Boylston St.
1903 Hurley, John Joseph.......Boston. 541 Commonwealth Av.
1913 Hurley, Patrick Eugene....Holyoke. 109 Suffolk St.
1903 Hurwitz, Abraham Joseph..Brookline. Office, Boston. 107 Green St.
1905 Hussey, Edward John.....Holyoke. 276 High St.
1891 Hutchings, Joseph Henry..Woburn. 514 Main St.
1909 Hutchins, Henry Talbot....Boston. 522 Commonwealth Av.
1895 Hutchinson, Charles Martin.Cambridge, 5 Garden St.
1895 Hutchinson, Chessman Palmer....Auburndale (Newton). 88 Central St.
1901 Hutchinson, Walter Perkins Abington.
1916 Hyde, Harold Valmore....Boston. 496 Commonwealth Av.
1917 Hyman, Clarence Henry...Boston. City Hospital.

I

1892 Ilsley, Frederick Roscoe... Medford. 69 Washington St
1909 Inglis, Harry James....... Brookline. Office, Boston. 483 Beacon St.
1917 Ingoldsby, Joseph Emmanuel Dorchester (Boston). 849 Blue Hill Av.
1885 } 1917 } Ingraham, Lena Vaughn Brookline. 38 Webster St.
1912 Ireson, Franklin Reynolds.. Marblehead. 216 Pleasant St.
1912 Irving, Frederick Carpenter Boston. 86 Bay State Rd
1917 Irving, Harry Washington Boston. 194 Huntington Av.
1897 Irwin, Vincent Joseph..... Springfield. 351 Main St.

J

1887 Jack, Edwin Everett....... Boston. 215 Beacon St.
1886 Jack, Ernest Sanford...... Melrose. 56 West Emerson St.
1883 Jack, Frederick Lafayette.. Boston. 215 Beacon St.
1901 Jack, Lewis Harlow....... West Newton (Newton). 68 Chestnut St.
1899 Jackson, Alexander Washington Southborough. Main St.
1897 Jackson, Alton Atwell..... Everett. 512 Broadway.
1892 Jackson, Charles William.. Monson. Main St.
1911 Jackson, Delbert Linscott.. Boston. 362 Commonwealth Av.
1885 Jackson, Fred William..... Jefferson, Me.
1884 Jackson, Henry............ Boston. 380 Marlboro' St.
1903 Jackson, Howard Bigelow.. Melrose. 96 West Emerson St.
1891 Jackson, James Marsh..... Boston. 230 Beacon St.
1897 Jackson, Oliver Howard.... Fall River. 34 North Main St.
1892 Jackson, Ralph Wentworth. Fall River. 257 Cherry St.
1915 Jackson, Roy Chase....... Harrisburg, Pa. State Hospital.
1880 Jackson, William Benjamin. Lowell. 329 High St.
1915 Jacoby, Rudolph........... Weymouth. 24 Commercial St.
1911 Jacques, Hector........... Fitchburg. 145 Water St.
1913 Jakmauh, Paul John...... South Boston (Boston). 509 Broadway.
1906 Janes, Arthur Percy....... Boston. 27 Hancock St.
1908 Janes, Benjamin Franklin, Jr. Northampton. 160 Main St.
1898 Janes, George Herbert..... Westfield. 5 Court St.
1913 Jantzen, Francis Thomas... Boston. 514 Commonwealth Av.
1880 Jaques, Henry Percy...... Lenox. "Home Farm."
1884 Jarvis, William Furness... Waltham. 326 Lexington St.
1890 Jelly, Arthur Carlton...... Boston. 10 Arlington St.
1883 Jenkins, Charles Edwin.... Lynn. 10 Ireson St.
1905 Jennings, Curtis Herman... Fitchburg 201 Mechanic St.
1912 Jessaman, Leon Webster... Framingham. 30 Hollis St.
1915 Jewett, Everett Porter..... Providence, R. I. City Hospital.
1917 Jewett, Howard Wakefield Lowell. 9 Central St.
1887 Jillson, Franklin Campbell. West Roxbury (Boston). 11 Hastings St.
1913 Johnson, Alfred Emil, Jr... Greenfield. 39 Main St.
1915 Johnson, Charles Frederic. Newburyport. 45 Washington St.
1901 Johnson, David Joseph..... Roxbury (Boston). 1 Schuyler St.
1907 Johnson, Erik St. John... New Bedford. 271 Union St.
1884 Johnson, Francis Emerson. Erving.
1883 Johnson, Frank Mackie.... Boston. 43 Tremont St.
1880 Johnson, Frederick William. Boston. 167 Newbury St.
1913 Johnson, Harold Abbott.... Lynn. 70 Broad St.
1915 Johnson, Herbert Lester... Roxbury. Office, Boston. 510 Commonwealth Av.
1914 Johnson, Herbert Lewis.... Hadley. Main St.
1908 Johnson, John Birger Albert Lowell. 10 East Merrimack St.
1894 Johnson, Mary Williamina Lougee Chestnut Hill (Newton). 158 Wolcott Road.
1894 Johnson, Orville Edson.... Winthrop. 123 Winthrop St.
1903 Johnson, Peer Prescott..... Beverly. 15 Washington St.
1914 Johnson, Sarah Coppinger Franconia, N. H.
1901 Johnson, Walter Sydney... Los Angeles, Cal. 1767 North Adams St.
1883 Johnson, William Augustus. Lowell. 145 Merrimack St.
1878 Johnson, William Louis.... Uxbridge. Main St.
1908 Johnston, William......... Dorchester (Boston). 210 Norfolk St.
1902 } 1917 } Johnstone, William Joseph { Jamaica Plain. Office, Boston. 196 Huntington Av.
1890 Jones, Charles David...... Malden. Office, Boston. 137 Newbury St.
1897 Jones, Daniel Fiske........ Boston. 195 Beacon St.
1891 Jones, Elgin Wilbur....... Lynn. 44 Atlantic St.
1907 Jones, Everett............. Brookline. Office. Boston. 496 Commonwealth Av.
1897 Jones, Frederick Ellis..... Quincy. 1150 Hancock St.
1905 Jones, Frederick Elmer... Brookline, 48 Corey Rd.
1887 Jones, Gilbert Norris...... Wellesley Hills (Wellesley).
1897 Jones, John Clarke........ Brookline. 56 Hawes St.
1892 Jones, Lombard Carter..... Waquoit (Falmouth). 80 Humphrey St.
1892 Jones, Lyman Asa......... Swampscott.
1898 Jones, Mary Scott......... Boston. 82 St. Stephen St.
1903 Jones, Raymond Child..... Fitchburg. 4 Ashburnham St.
1911 Jones, Robert Le Roy..... Lowell. 219 Central St.
1905 Jones, Wellington West.... Housatonic (Great Barrington). 41 Main St.
1893 Jones, William Marks..... Lowell. 145 Merrimack St.
1859 Jordan, Charles †1895 Wakefield. 9 Jordan Av.
1911 Jordan, Ernest Major...... Boston. 496 Commonwealth Av.
1873 Jordan, George Albert †1913 Worcester. 46 Myrtle St.
1905 Jordan, John Franklin..... Peabody. 76 Lynn St.
1894 Joslin, Elliott Proctor...... Boston. 81 Bay State Rd.
1911 Joslyn, Arthur Everett..... Lynn. 211 Western Av.
1901 Jouett, Fred Robert....... Cambridge. 3 Garden St.
1906 } 1912 } Joyce, Thomas Francis... Lawrence. 121 Marston St.
1914 Judd, Ernest Hart......... Springfield. 685 State St.
1912 Judkins, Charles Louville Mason Lynn. Office, Boston. 149 Newbury St.
1891 Judkins, Frank Louville... Lynn. 7 Mason St.
1915 Jurist, Charles............ Springfield. 1141 North St.

K

1890 Kaan, George Warton..... Brookline. Office, Boston. 419 Boylston St.
1917 Kable, Josephine Downie.. Wrentham. Sch. Feeble-Minded.
1916 Kandib, Anna Hilda...... Hathorne (Danvers). State Hospital.
1917 Kane, William Vincent.... Lynn. 11 Bay View Av.
1914 Kaplovitch, Henry......... Lawrence. Office, Haverhill. 50 Merrimack St.
1904 Katsainos, George Michel.. Boston. 106 Huntington Av.
1889 Kean, Michael Edward.... Manchester, N. H. 780 Elm St.
1903 Keaney, Henry Joseph..... Everett. 385 Broadway.
1901 Kearney, John Henry...... Fitchburg. 80 Wallace St.
1909 Kearney, Joseph Patrick... Lowell. 10 East Merrimack St.
1886 Keefe, Daniel Edward..... Springfield. 127 Main St.
1880 } 1902 } Keefe, Patrick Henry... { Providence, R. I. 257 Benefit St.
1889 Keegan, Charles Andrew... Arlington. 734 Mass. Av.
1906 } 1911 } Keeler, William Basil... { Roxbury (Boston). 470 Warren St.

1902 } 1914 } Keenan, George Francis.. Boston. 520 Beacon St.
1897 Keenan, Herbert John..... South Boston (Boston). 254 Broadway.
1916 Keenan, James Alphonsus. Boston. 745 Mass. Av.
1910 Keever, Henry Floyd....... Auburndale (Newton). 69 Maple St.
1904 Keith, Halbert Lynn....... Milford. 255 Main St.
1884 Keith, Wallace Cushing.... Brockton. 237 North Main St.
1892 Keleher, William Henry... Woburn. 48 Pleasant St.
1910 Kelleher, Jeremiah Edward. Haverhill. 170 Winter St.
1896 Kelleher, Patrick Francis.. Cambridge. 1713 Mass. Av.
1912 Kelley, Clarence Moore.... Westminster.
1914 Kelley, Edward Joseph.... Watertown. 218 Main St.
1917 Kelley, Eugene Robert.... Boston. State House.
1916 Kelley, Henry Joseph..... Dorchester (Boston). 109 Stoughton St.
1903 Kelley, Joseph Henry Hart Dorchester (Boston). The Peabody, Peabody Sq.
1914 Kelley, Lawrence Kendall.. Peabody. 39 Washington St.
1914 Kelley, Robert Edward Stack Mattapan (Boston). 249 River St.
1883 Kellogg, Edward Brinley... Boston. Office, 178 Devonshire St.
1912 Kellogg, Foster Standish... Boston. 96 Bay State Rd.
1892 } 1899 } Kellogg, Frederic Leroy { Boston. 366 Commonwealth Av.
1908 Kelly, John Michael....... Dorchester (Boston). 182 Bowdoin St.
1893 Kelly, William P.......... Pittsfield. 61 Union St.
1913 Kemp, Howard Martin..... Greenfield. 6 Franklin St.
1915 Kemp, Lysander Schaffer.. Canton. Mass. Hosp. Sch.
1895 } 1902 } Kennard, Harry Delano... Peabody. 84 Main St.
1877 Kennealy, John Henry..... Brookline. Office, Roxbury (Boston). 1570 Tremont St.
1898 Kennedy, Alexander Gladstone Boston. 1075 Boylston St.
1905 Kennedy, Edward Anthony. Great Barrington. 314 Main St.
1901 Kennelly, Julia Grice..... Cambridge. Kennedy Rd.
1913 Kenney, Clarence Bronson. Winchendon. 22 Walnut St.
1909 Kenney, Thomas Francis... Worcester. 9 High St.
1905 Kenney, Walter Clement... Winchendon. 22 Walnut St.
1909 Kennison, Frederick Marshman Newton, N. H. Main St.
1907 Kent, Bradford........... Dorchester (Boston). 798 Blue Hill Av.
1905 Kent, Ralph Porter........ Attleborough. 27 South Main St.
1914 Kenworthy, Marion Edwena Foxborough. State Hosp.
1883 Kenyon, Henry Jesse...... Worcester. 84 Pleasant St.
1900 Kepler, Charles Ober...... Boston. 362 Commonwealth Av.
1904 Kerr, Isabella Dickieson... Boston. 821 Beacon St.
1915 Kerrigan, John Joseph..... Fall River. 1427 North Main St.
1911 Kerrigan, Joseph Henry... Stoneham. 66 Central St.
1916 Kewer, Leo Thomas....... Belmont. 16 Hawthorn St.
1917 Khoury, Kamel .... Boston. 79 Tyler St.
1909 Kickham, Charles Joseph.. Brookline. Office, Boston. 536 Commonwealth Av.
1908 Kilbourn, Arthur Goss..... Groton. Main St.
1884 Kilburn, Henry Whitman.. Boston.
1913 Kilburn, Ira Nelson........ Holyoke. 180 Chestnut St.
1877 Kilby, Henry Sherman..... North Attleborough. 98 Church St.
1914 Killam, Franklin Harrison West Medford (Medford). 3 Brook St.
1914 Killelea, Edward Vincent.. Fitchburg. 5 Day St.
1890 Kilroy, Philip............. Springfield. 61 Chestnut St.
1905 Kimpton, Arthur Ronald... Boston. 66 Bay State Rd.
1909 King, Frederick Augustine. Boston. 1 Cumberland St.
1910 King, George Clifford...... Fall River. 57 Rock St.
1914 King, George Elbert....... Wollaston (Quincy). 71 Beach St.
1898 King, Myron Louis........ Cambridge. 788 Mass. Ave.
1888 King, Nathaniel Clark..... Campello (Brockton). 1147 South Main St.
1910 King, Nicholas James Quan Roslindale (Boston). 44 Ashland St.
1881 Kingman, Rufus Anderson. Brookline. 45 Windsor Rd.
1906 Kingsbury, Walter Warren. Malden. 11 High St.
1904 Kinloch, Raymond Alexander Springfield. 83 Walnut St.
1914 Kinne, George Lyman..... Holyoke. 285 Maple St.
1900 Kinney, William D'Arcy... Osterville (Barnstable).
1908 Kinnicutt, Roger........... Worcester. 56 Cedar St.
1904 Kirby, Holder Crary....... New Bedford. 33 South Sixth St.
1904 Kirby, James Richard...... Clinton. 181 Chestnut St.
1907 Kirkpatrick, George Holland Lynn. 192 South Common St.
1915 Kirkwood, Allan Stewart.. Newton Center (Newton). 1301 Center St.
1910 Kissock, Robert James..... Boston. 479 Beacon St.
1898 Kite, Walter Chester...... Milton. 17 Russell St.
1880 Kittredge, Joseph.......... Brookline. 69 Cypress St.
1874 Kittredge, Thomas......... Salem. 13 Chestnut St.
1914 Kline, George Milton....... Beverly. Office, Boston. No. 36 State House.
1881 Knapp, Philip Coombs..... Boston. 535 Beacon St.
1899 Knight, Charles Eugene.... Rockland. 29 Church St.
1902 Knight, Charles Lewis..... West Roxbury (Boston). Office, Boston 544 Columbus Av.
1902 Knight, Charles Sumner... Westborough. 54 West Main St.
1896 Knight, Marcus Whitney... Milford. 8 West St.
1889 Knowles, James Harris.... Gloucester. 2½ Highland St.
1884 Knowles, William Fletcher. West Newton. Office, Boston. 220 Clarendon St.
1892 Knowlton, Charles Davison. Roxbury (Boston). 574 Warren St.
1910 Knowlton, Edward Allen... Holyoke. 227 Maple St.
1903 Knowlton, Wallace Miles.. Boston. 462 Boylston St.
1901 Knowlton, William Thomas. Hubbardston. Barre Rd.
1911 Knudson, Mette Marie..... West Roxbury (Boston). 78 Park St.
1894 Konikow, Moses Joseph.... Roxbury (Boston). 486 Warren St.
1916 Konrad, Frank Charles William Boston. 483 Beacon St.
1916 Koplin, Harry............ Springfield. 1293 North St.
1901 Kurth, Gustave Emil...... Lawrence. 86 East Haverhill St.

L

1917 Lacey, Walter Hamer..... Boston. Mass. Gen. Hosp.
1909 Lachance, Alfred Philias... Gardner. 142 Parker St.
1900 Ladd, Maynard............ Boston. 270 Clarendon St.
1907 Ladd, William Edwards... Boston. 346 Beacon St.
1906 Lahey, Francis Howard.... Boston. 638 Beacon St.
1899 Laighton, Florence Marion. New York, N. Y. 33 West 96th St.
1917 Laliberté, Elie Joseph..... Fall River. 1420 So. Main St.
1902 } 1915 } Lally, Francis Henry..... Milford. 5 Park Terr.
1914 Lally, William James...... Pittsfield. 184 North St.
1892 LaMarche, Walter Joseph.. Cambridge. 1038 Mass. Av.
1901 Lambert, Fred De Forest.. Tyngsborough.
1901 Lambert, John Henry...... Lowell. 202 Merrimack St.
1912 LaMoure, Charles Ten Eyck Mansfield Depot, Conn. State Tr. School and Hospital.
1894 Lamoureux, Joseph Elzear. Lowell. 710 Merrimack St.
1892 Lancaster, Sherman Russell Cambridge. 27 William St.
1891 Lancaster, Walter Brackett Brookline. Office, Boston. 522 Commonwealth Av.
1909 Lane, Clarence Guy........ Woburn. Office, Boston. 520 Commonwealth Av.
1914 Lane, Clayton Rogers...... Fitchburg. Burbank Hospital.
1884 Lane, Edward Binney...... Jamaica Plain (Boston). Office, Boston. 419 Boylston St.

1916 Lane, Elwin Dexter...... Andover. 9 Locke St.
1894 Lane, Francis Augustus.... East Lynn (Lynn). 29 Lakeview Av.
1905 Lane, John William....... Dorchester (Boston). Office, Boston. 520 Beacon St.
1900 Lane, Walter Appleton.... Milton. 173 School St.
1904 Lang, Herbert Bowman.... South Hadley.
1896 Langlois, Joseph Augustus. Pittsfield. 54 Bradford St.
1907 Lanpher, Howard Arthur.. Chester.
1915 LaRiviere, Athanase de Charette Evariste New Bedford. 1394 Acushnet Av.
1913 La Rochelle, Fred Désiré.. Springfield. 508 Main St.
1915 Larrabee, Frank Walton... Brighton (Boston). 645 Washington St.
1905 Larrabee, Herbert Manson. Tewksbury. Main St.
1897 Larrabee, Ralph Clinton... Boston. 912 Beacon St.
1911 Laskey, Edward Philip.... Haverhill. 90 Emerson St.
1899 Latham, Benoni Mowry.... Mansfield. 10 North Main St.
1876 Lathrop, William Henry †1905 Lowell. 21 First St.
1910 Laton, George Peavey..... Salem Depot, N. H. Main St.
1898 Lavalée, George Omer..... Lowell. 790 Merrimack St.
1872 LaVigne, Alfred Willis †1913 Lowell. 173 Merrimack St.
1906 Law, Katharine Hayes..... Erie, Pa. 247 West 8th St.
1888 Lawler, William Patrick... Lowell. 53 Central St.
1914 Lawley, Brace Irving...... Arlington. 214 Mass. Av.
1907 Lawlor, Edward Francis.. Lawrence. 6 Lowell St.
1916 Lawlor, James Francis.... Beverly. 1 Knowlton St.
1916 Lawlor, John Charles..... South Boston (Boston). Carney Hospital
1906 Lawlor, Richard Henry.... Methuen. 251 Broadway.
1911 Lawrence, Charles Henry, Jr. Brookline. Office, Boston. 522 Commonwealth Av.
1896 Lawrence, James Wilmot.. Malden. 25 Washington St.
1897 Lawrence, Joseph Henry.. Brockton. 23 Main St.
1917 Lawrence, Joseph Louis... Roxbury (Boston). 48 Weld Av.
1899 Lawrence, Nellie Louise... Louisville, Ky. 409 Fountain Court.
1873 Lawrence, Robert Means †1912 Boston. 177 Bay State Rd.
1916 Lazarus, Louis............ Worcester. 97 Grafton St.
1895 } 1917 } Leach, Alfred Clinton.. Orange.
1894 Leach, Edward Mortimer.. Rochdale (Leicester).
1893 Leach, Horace Morton †1911 Rochdale (Leicester).
1892 Leahey, George Aloysius.. Lowell. 128 Merrimack St.
1895 Leard, John Samuel Hick.. Jamaica Plain (Boston). 392 Arborway.
1887 Learned, William Turell... Fall River. 42 Franklin St.
1892 Learoyd, Charles Berry.... Taunton. 2 Vine St.
1914 Leary, Alfred James....... Newton. Office, Boston. 19 Bay State Rd.
1905 Leary, Chrysostom John... New Bedford. 415 Pleasant St.
1901 Leary, Olga Cushing....... Jamaica Plain (Boston). 44 Burroughs St.
1913 Leary, Patrick Frank...... Turner's Falls (Montague) 20 Prospect St.
1906 Leary, Timothy............ Jamaica Plain (Boston). Office, Boston. 416 Huntington Av.
1897 Leary, William Charles... Springfield. 630 Main St.
1916 Leavitt, Frank Clyde...... Belmont. 87 Pine St.
1917 Leavitt, Mary Augusta.... Medford. 12 Kilsyth Rd.
1914 Leavitt, Peirce Henry..... Brockton. 129 W. Elm St.
1865 Leavitt, William Whipple †1906 Pittsfield. 120 South St.
1909 LeBœuf, Alfred Thomas... Salem. 319 Lafayette St.
1916 Ledbury, John William.... Uxbridge. No. Main St.
1910 Lee, Harry Jason.......... Boston. 535 Beacon St.
1907 Lee, Roger Irving......... Cambridge. 51 Brattle St.
1914 Lee, Wesley Terence....... Brookline. Office, Boston. 220 Clarendon St.
1901 Leen, Thomas Francis..... Boston. 19 Bay State Rd.
1912 Leeper, Marion Eleanor.... Northampton. 33 Elm St.
1900 Legg, Arthur Thornton..... Boston. 535 Beacon St.
1905 LeGro, Lester Burnside.... Bradford. Office, Haverhill. 50 Merrimack St.
1916 Leith, Richard Bliss....... Lawrence. Lawrence Gen. Hospital.
1911 Leland, Forrest LeRoy..... South Hadley Falls (South Hadley). 44 Bardwell St.
1877 Leland, George Adams..... Boston. 354 Commonwealth Av.
1912 Leland, George Adams, Jr.. Boston. 483 Beacon St.
1917 Leland, Harold Leander.. Boston. 82 E. Concord St.
1903 Lemaire, Willard Wallace. Worcester. 458 West Boylston St.
1908 Lemaire, William Franklin. East Lynn (Lynn). 134 Chestnut St.
1913 Lemay, Alfred Mederic.... Brockton. 7 Main St.
1906 Lemieux, Theodule Alfred. Lawrence. 356 Haverhill St.
1916 Leonard, Edward DeWitt.. Newton Center (Newton). 661 Commonwealth Av.
1913 Leonard, Ralph Davis..... Melrose. Office, Boston. 43 Bay State Rd.
1915 Leonard, Zenas Lockwood.. West Stockbridge. Office, Pittsfield. 100 North St.
1908 Leslie, Charles Thomas.... Pittsfield. 86 North St.
1900 Leslie, Herbert Granville.. Amesbury. 273 Main St.
1910 L'Esperance, Oscar Raöul Talon Boston. 100 Boylston St.
1908 Lesses, Max............... Salem. 62 Washington Sq.
1914 Levek, Joseph Arthur...... Lawrence. 32 Lawrence St.
1916 Levine, Harry Benjamin... Dorchester (Boston). 11 Wolcott St.
1915 Levine, Samuel Albert..... Roxbury (Boston). 7 Intervale St.
1904 Levins, Nathan Noah...... Boston. 30 Chambers St.
1894 Lewis, Arthur Cuthbert... Fall River. 1018 North Main St.
1906 Lewis, Elisha Sears....... Princeton. Wachusett St.
1913 Lewis, Frank Edward..... Nantucket.
1906 Lewis, James Prince....... Waltham. Office, Boston. 543 Boylston St.
1914 Lewis, Seth Ames......... Springfield. 45 North Main St.
1897 Libby, Edward Norton..... Roxbury (Boston). Office, Boston. 638 Beacon St.
1893 Libby, Jesse Herbert...... East Weymouth (Weymouth).
1899 Libby, Mary Gordon....... Newport, N. H.
1903 Libby, Mildred Augusta.... Wrentham. State School.
1912 Liebman, William.......... Brookline. Office, Boston. 1069 Boylston St.
1915 Limauro, Louis Herbert.... Lynn. 17 Franklin St.
1912 Lincoln, George Chandler.. Worcester. 2 Linden St.
1889 Lincoln, Jacob Read....... Millbury.
1903 Lincoln Merrick........... Worcester. 2 Linden St.
1903 Lindquist, Carl Augustus.. Boston. 24 Westland Av.
1915 Lindsay, John Crandall.... Worcester. State Hosp.
1897 Lindsay, Joseph Ira........ Worcester. 7 Oberlin St.
1913 Lindsay, Marie Strom..... Worcester. State Hospital.
1904 } 1914 } Lindsey, John Hathaway. Fall River. 151 Rock St.
1905 Linenthal, Harry.......... Roxbury (Boston). Office, Boston. 45 Bay State Rd.
1886 Linfield, Edward Porter... Avon.
1884 Litchfield, William Harvey. Brookline. 1378 Beacon St.
1895 Little, Abby Noyes......... Newburyport. 22 Essex St.
1916 Little, George Thomas..... Uxbridge. Oak St.
1904 Little, John Mason, Jr..... Boston. 374 Marlboro' St.
1884 Little, William Brimblecom. Lynn. 13 Nahant St.
1898 } 1907 } Littlefield, George Curtis. { Webster. 23 East Main St.
1909 Littlefield, Marion Curtis.. Bradford (Haverhill). Office Haverhill. 50 Merrimack St.
1893 Littlefield, Samuel Horace.. Roxbury (Boston). 2 St. James St.
1909 Littlewood, Thomas........ Pittsfield. 779 Tyler St.
1909 Liverpool, Coval Henry.... West Somerville (Somerville). 325 Highland Av.

1900 Livingston, Clarence Bertram Lowell. 9 Central St.
1900 Livingston, Ernest George..Lowell. 10 East Merrimack St.
1906 Lloyd, Henry Demarest....Boston. 657 Boylston St.
1903 Locke, Edwin Allen........Boston. 311 Beacon St.
1889 Lockhart, Joseph Smith....Cambridge. 837 Mass. Av.
1910 Loder, Halsey Beach.......Boston. 520 Commonwealth Av.
1903 Loewe, Leonard Joseph....Higganum, Conn.
1917 Loewe, Walter Ralph......Dorchester (Boston). 23 Topliff St.
1915 Look, Percy Jonathan......Andover. 115 Main St.
1902 Lord, Frederick Taylor....Boston. 305 Beacon St.
1896 Lord, Sidney Archer.......Concord. Nashawtuc Hill
1907 Lorimer, Felix............Boston. 50 Peterboro St.
1897 Loring, Robert Gardner....Lincoln. Office, Boston. 10 Arlington St.
1876 Loring, Robert Pearmain..Newton Center (Newton). †1917 19 Crescent Av.
1890 Lothrop, Howard Augustus.Boston. 101 Beacon St.
1909 Lothrop, Oliver Ames......Boston. 101 Beacon St.
1895 Lougee, Frank Taylor......Waban. Office, Lynn, 11 Atlantic St.
1912 Lougee, George Woodworth.Lynn. 57 Estes St.
1910 Lougee, John Leroy........West Roxbury (Boston). Office, Boston. 514 Commonwealth Av.
1899 Lougee, William Wheeler..Malden. 195 Main St.
1897 Loughran, James Francis..Lowell. 219 Central St.
1872 Lovejoy, Charles Averill...Lynn. 64 Broad St.
1894 Lovell, Charles Dixon Smith Lynn. 128 South Common St.
1885 Lovell, Charles Edward....Whitman. South Av,
1894 Lovell, David Bigelow.....Worcester. 340 Main St.
1900 Lovell, Martha Eleanor....Allston (Boston). 52 Ashford St.
1916 Lovesey, Burton Edward..Lowell. Lowell Gen. Hospital.
1884 Lovett, Robert Williamson.Boston. 234 Marlboro' St
1903 Lowd, Harry Mosher.......Swampscott.
1886 Lowe, Fred Messenger.....West Newton (Newton). 1354 Washington St.
1901 Lowell, Albert Fay........Gardner. 20 Vernon St.
1898 Lowell, Alverne Percy.....Fitchburg. 52 Hartwell St.
1901 Lowell, Freeman Lamprey Boston. 2A Milford St.
1905 Lowell, William Holbrook.Winchester. Office, Boston 101 Newbury St.
1906 Lowney, Dennis Joseph....New Bedford. 1325 Acushnet Av.
1902 Lowney, John Francis.....Fall River. 755 Plymouth Av.
1915 Lowrey, Lawson Gentry...Roxbury. 74 Fenwood Rd.
1910 Lucas, William Palmer....San Francisco, Calif. University Hospital.
1908 Luce, Dean Sherwood......Canton.
1913 Luce, LeRoy Alson........Boston. 536 Commonwealth Av.
1898 Luchsinger, Harry Warner.Housatonic (Great Barrington). Main St.
1913 Luftig, Jacob.............Roxbury (Boston). 562 Warren St.
1891 Lund, Fred Bates.........Boston. 527 Beacon St.
1908 Lundwall, Laurence Svante Bernhard Gardner. 316 Central St.
1908 Lupien, Henry John.......Brockton. 63 Main St.
1890 Lussier, Charles Arthur...Worcester. 154 Grand St.
1913 Lyle, Eveline Burton......Brookline. 35 Winchester St.
1914 Lyman, Henry............Boston. 36 Commonwealth Av.
1907 Lyman, William Robinson.Worthington.
1899 Lynch, Charles Francis....Springfield. 317 Main St.
1903 Lynch, Cornelius Joseph...Quincy. 1620 Hancock St.
1908 Lynch, Daniel Lawrence...Roslindale (Boston). 100 Belgrade Av.
1902 Lynch, Patrick Michael....Springfield. 39 Main St.
1911 Lynch, William Francis...Worcester. 390 Main St.
1914 Lyons, George Aloysius....Lynn. 120 South Common St.
1896 Lyons, Joseph Benedict....Charlestown (Boston). 1 Dexter Row.

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1889 MacArthur, George Elden..Ipswich. 45 Central St.
1913 MacAusland, Andrew Roy.Boston. 240 Newbury St.
1905 MacAusland, William Russell Boston. 240 Newbury St.
1913 Macauley, Joseph Arthur..Dorchester (Boston). 561 Dudley St.
1907 MacCallum, Wallace Peter.Boston. 214 Huntington Av.
1905 MacCormick, John Allan...Boston. 1077 Boylston St.
1912 MacCorison, Carl Copeland North Reading. State Sanatorium, P. O. North Wilmington.
1896 Macdonald, Alexander Ambrose Dorchester (Boston). 119 Washington St.
1887 Macdonald, Colin William..Roxbury (Boston). 1 New Heath St.
1909 MacDonald, Donald Francis Taunton. 10 White St.
1906 Macdonald, Frederick Cornelius Roxbury (Boston). 622 Warren St.
1914 MacDonald, Frederick Livingstone Waltham. Office, Boston. 196 Huntington Av.
1913 Macdonald, John Bernard.Hathorne (Danvers). State Hospital.
1908 MacDonald, William Campbell Malden. 538 Main St.
1865 Macdonald, William Lewis †1903 Wellesley Hills (Wellesley).
1915 Macdougall, Duncan.......Haverhill. 131 Main St.
1908 Mace. Charles Herbert....Huntington.
1913 MacFadyen, John Alexander Worcester. 118 Belmont St.
1916 MacGray, Charles Leverne.Needham. 1070 Great Plain Av.
1917 MacIntyre, William Angus North Grafton (Grafton). State Hospital.
1914 MacIver, George Albert...Boston. Mass. Gen. Hosp.
1901 Mackay, Edward Hart....Clinton. 92 Walnut St.
1898 MacKay, George Finlay...Dalton. 71 Main St.
1914 MacKay, William Henry...Worcester. City Hospital.
1879 MacKeen, Alfred Atwater..Whitman. 29 Park Av.
1915 MacKenzie, Roland Chester Waltham. 111 Main St.
1906 MacKerrow, Horace Gilford Worcester. 96 Eastern Av.
1885 Mackie, Laura Viola Gustin Attleborough. 157 Pleasant St.
1899 Mackie, William Charles...Brookline. 54 Coolidge St.
1905 MacKillop, Daniel.........Cambridge. 307 Broadway.
1907 MacKinnon, Donald Lauchlin Boston. 8 Columbus Sq.
1898 MacKnight, Adam Stephenson Fall River. 355 North Main St.
1914 MacKnight, William Frank.Boston. 198 St. Botolph St.
1901 MacLennon, Angus Daniel.Boston. 654 Tremont St.
1907 } 1913 } 1915 } MacLeod, John Malcolm..Quincy. 28 Federal St.
1908 MacLeod, Norman Murray.Newport, R. I. Newport Hospital.
1911 MacMichael, Earle Haggett.Malden. 56 Summer St.
1890 MacMillan, Andrew Louis †1915 Hanover. Washington St.
1910 MacMillan, Andrew Louis, Jr. Concord, N. H. 28 South Main St.
1910 MacNeil, Charles Seward Jadis Malden. 143 Main St.
1912 Macomber, Donald.........West Newton (Newton). 23 Prince St.
1892 } 1903 } MacPherson, William Ellsworth } Canton.
1904 Macrae, Annie Campbell...Fall River. 130 Rock St.
1904 Madden, William Daniel..Boston. 669 Mass. Av.
1905 Magrath, George Burgess .Boston. 274 Boylston St.
1898 Maguire, Charles Francis..Somerville. 432 Medford St.
1906 Maguire, Eugene Leo......Somerville. 390 Medford St.

1908 Magune, Frank Leroy.....Worcester. 28 Pleasant St.
1903 Magurn, Francis Thomas Louis Charlestown (Boston). 112 Main St.
1913 Mahar, Harold Robert Collins Orange. 1 High St.
1904 Mahoney, Daniel Francis..Boston. 24 Marlboro' St.
1898 Mahoney, Edward Joseph..Springfield. 4 Mattoon St.
1905, 1915 Mahoney, Francis Xavier..Dorchester (Boston). 701 Columbia Rd.
1896 Mahoney, George Clifton...West Somerville (Somerville). 97 College Av.
1917 Mahoney, John Lewis.....Boston. 419 Boylston St.
1888 Mahoney, Stephen Andrew.Holyoke. 630 Dwight St.
1913 Mahoney, Walter Francis..Westborough. 39 South St.
1902 Mahony, Francis Ronan...Lowell. 8 Merrimack Sq.
1899 Mains, Charles Frederick..Dorchester (Boston). 208 Ashmont St.
1915 Mains, Herbert Llewellyn..Danvers. 71 Holton St.
1905 Makechnie, Arthur North..Cambridge. 14 Upland Rd.
1879 Makechnie, Horace Perkins †1907 West Somerville (Somerville). 238 Elm St.
1891 Mallory, Frank Burr......Brookline Office, Roxbury (Boston). 240 Longwood Av.
1903 Malone, Charles...........Jamaica Plain (Boston). 3 Glen Rd.
1908 Maloney, John Martin.....Springfield. 559 Liberty St.
1893 Manahan, Herbert Wellington Lawrence. 104 South Broadway.
1901 Mandell, Augustus Hamlin.New Bedford. 25 Sycamore St.
1893 Mangan, John Joseph.... Lynn. 174 South Common St.
1902 Manix, Edward Tuck......Lynn. 59 Lewis St.
1908 Mannix, Louis Edward....Chicopee Falls (Chicopee). 112 Main St.
1916 Manoogian, Byzant John..Peabody. 65 Main St.
1915 Mansfield, Burleigh Burton Salem. 31 Charter St.
1869 Mansfield, Henry Tucker †1911 Needham. 897 Highland Av.
1897 Mansfield, James Albert...Dorchester (Boston). 42 Hancock St.
1899 Mansur, Leon Wallace.....Los Angeles, Calif. 1109 Brockman Bldg.
1912 Marble, Henry Chase......Boston. 28 Commonwealth Av.
1870 Marble, John Oliver †1908 Worcester. 16 Murray Av.
1903 Marcley, Walter John......Minneapolis, Minn. 9th St. and Nicollet Av.
1863 Marcy, Henry Orlando....Boston. Office, Cambridge. 860 Mass. Av.
1901 Marcy, Henry Orlando, Jr.Newton. 140 Sargent St.
1916 Margeson, Reginald DimockBoston. 527 Beacon St.
1903 Markham, Erwin Walter...Lee. Main St.
1913 Maroney, Patrick Joseph...Westfield. 16 Chapel St.
1913 Marr, Edward Loring.....Melrose. 36 Whittier St.
1907 Marr, Myron Whitmore...Dorchester (Boston). 11 Hopestill St.
1912 Marr, Robert McClellan... Westfield. 29 Elm St.
1912 Marsden, George..........New Bedford. 1579 Acushnet Av.
1915 Marsh, Albert.............Reading. R. F. D.
1910 Marsh, Anna Peabody.....Danvers. 155 Center St.
1895 Marsh, Arthur White.....Worcester. 690 Main St.
1903 Marshall, Augustus Thompson Chelsea, Vt.
1909 Marshall, Herman Weston.Boston. 66 Bay State Rd.
1908 Marshall, William Reginald Lynn. 26 Broad St.
1911 Marston, Warren Winfield.Newton. 337 Washington St.
1897 Martel, Stanislaus.........Lynn. Office, Boston. 362 Commonwealth Av.
1897 Martin, Archibald Herbert.Lynn. 29 Broad St.
1916 Martin, David Lorenzo....Dorchester (Boston). 4 Rosedale St.
1913 Martin, Edward...........Roxbury (Boston). 217 Warren St.
1917 Martin, George Forrest....Lowell. 9 Central Sq.
1913 Martin, Harold Winthrop..Roxbury (Boston). 151 Warren St.
1898 Martin, Harry Charles....Springfield. 374 Main St.
1904 Martin, John Brayton.....Lynn. 25 Newhall St.
1913 Martin, John Foley........Boston. 788 Beacon St.
1897 Martin, John Macleod.....Roxbury (Boston). 440 Warren St.
1902 Marvell, Mary Wilbur.....Fall River. 243 Highland Av.
1916 Marvin, Frank William...Boston. 522 Commonwealth Av.
1884 Mason, Atherton Perry....Fitchburg. 748 Main St.
1914 Mason, Broadstreet Henry.Worcester. State Hospital.
1913 Mason, Gilbert McClellan..Dorchester (Boston). Office, Boston. 520 Beacon St.
1902 Mason, Nathaniel Robert...Boston. 483 Beacon St.
1907 Massé, John Baptiste......Lawrence. 277 Broadway.
1900 Masten, Charles Howard...Worcester. 919 Main St.
1876 Mather, Edward Elias †1910 Williamstown.
1906 Mather, John Adams......Colrain. Box 49.
1907 Mathes, Roy Wentworth...Lynn. 32 Chestnut St.
1910 Mathews, Robert Francis..Worcester. 18½ Portland St.
1915 Mathewson, Frank Weeden New Bedford. 250 Union St.
1879 Matte, Joseph Hubert Ambrose †1914 North Adams. 82 Church St.
1909 May, George Elisha.......Newton Center (Newton). 661 Commonwealth Av.
1916 May, James Vance........Dorchester Center. (Boston). State Hosp.
1899 May, John Shepard........Roxbury (Boston). 495 Warren St.
1905 Mayberry, Frank Eugene...Pittsfield. 100 North St.
1916 Mayers, John Edward.....South Boston (Boston). 749 Broadway.
1902 Mayhew, Orland Smith....Vineyard Haven (Tisbury).
1896 McAdams, James Philip...Lowell. 295 Central St.
1910 McAdams, Peter Stephens..Cambridge. Office, Boston. 1075 Boylston St.
1905 McAllester, Ralph William.Everett. 15 Linden St.
1899 McAllister, Frederick Danforth Methuen. Office, Lawrence. 301 Essex St.
1906 McArdle, John Joseph.....Lawrence. 477 Essex St.
1902 McBain, William Hearst...Malden. 456 Pleasant St.
1897 McCabe, John Joseph......Holyoke. 290 Maple St.
1905 McCaffrey, Charles Francis.Somerville. 44 Summer St.
1913 McCann, Charles Daniel...Brockton. 28 Main St.
1917 McCarthy, Charles Daniel Jr. Malden. 96 Summer St.
1886 McCarthy, Charles Daniel.Malden. 164 Pleasant St.
1897 McCarthy, Charles Florence Winchester. 452 Main St.
1892 McCarthy, Eugene Allan...Cambridge. 5 Bigelow St.
1908 McCarthy, Eugene Ambrose Fall River. 901 Second St.
1908, 1916 McCarthy, Eugene Justin.Malden. 17 Garnet St.
1906 McCarthy, Francis Patrick.Milton. Office, Boston. 394 Marlboro St.
1907 McCarthy, Louis Flurence.Malden. 311 Pleasant St.
1897 McCarthy, Thomas Francis Marlborough. Cotting Av.
1890 McCarthy, Thomas Horatio Brockton. 183 Main St.
1906 McCarthy, Timothy Francis Jamaica, N. Y. 5 Ray St.
1916 McCartin, John Edward...Dorchester (Boston). 467 Columbia Road.
1917 McCarty, Edward Michael Somerville. 30 Walnut St.
1878 McCarty, James Joseph...Lowell. 574 Central St.
1904 McCausland, William James Quincy. 123 Franklin St.
1875 McClean, George Chesley †1916..Springfield. 337 State St.
1917 McClintock, Elsie ....Gardner. Henry Heywood Hosp.
1912 McClintock, Francis Blake.Chelsea. 27 Crescent Av.
1911 McCluskey, Richard John..Lowell. 40 Middlesex St.
1908 McClusky, Henry Lincoln..Worcester. 7 Hawthorne St.
1912 McConnell, David James..Greenfield. 2 Chapman St.
1875 McCormick, Cornelius Joseph Waltham. 825 Main St.
1906 McCormick, John Joseph..Woburn. 60 Montvale Av.

1907	McCready, Leo Thomas....	Jamaica Plain (Boston). 2 Peter Parley Rd.
1911	McCreery, Clarence Charles	Somerset. Riverside Av.
1906	McCurdy, Theodore Edward Alexis	Roxbury (Boston). 808 Tremont St.
1900	McDermott, Joseph Edward	Charlestown (Boston). 296 Bunker Hill St.
1898	McDermott, William Vincent	Salem. 6 Brown St.
1903	McDonald, James William.	Worcester. 33 Trumbull St.
1902	McDonald, Samuel James..	Boston. 657 Boylston St.
1899	McDonald, William Joseph.	Brookline. 47 Garrison Rd.
1900	McEvoy, George Albert....	Dorchester (Boston). Office, Boston. 520 Beacon St.
1894	McEvoy, Thomas Edward..	Worcester. 37 Portland St.
1898	McFee, William David....	Haverhill. Office, Boston. 149 Newbury St.
1914	McGann, Pierce Powers....	Somerville. 140 Highland Av.
1886	McGannon, Thomas Gerald.	Lowell. 36 Nesmith St.
1891	McGauran, Michael Sheridan	Lawrence. 266 Broadway.
1900	McGee, Fanny Maria......	Waban (Newton). 765 Chestnut St.
1893	McGillicuddy, John Timothy	Worcester. 390 Main St.
1904	McGillicuddy, Richard Aloysius	Turner's Falls (Montague). Avenue A
1914	McGinity, Joseph Taney...	Springfield. 236 Dickinson St.
1909	McGinley, Michael Charles.	Ipswich. Central St.
1900	McGirr, Felix Francis.....	Cambridge. 1436 Cambridge St.
1898	McGrath, Bernard Francis.	Milwaukee, Wis. Marquette School. Med.
1912	McGraw, Andrew James...	Taunton. 61 Broadway.
1907	McGurn, William J........	Roxbury (Boston). 1470 Tremont St.
1914	McIntire, Frederic Joseph.	Lynn. 63 North Common St.
1908	McIntire, George Francis..	Cambridge. 5 Dana St.
1882	McIntire, Herbert Bruce...	Cambridge. 4 Garden St.
1909	McKallagat, Peter Leo....	Lawrence. 301 Essex St.
1915	McKechnie, Frederick Joseph	Springfield. 317 Main St.
1897	McKeen, Sylvester Forshay	Allston (Boston). 556 Cambridge St.
1912	McKelvey, Alexander Dunbar	Toronto, Canada. 193 Bloor St., East.
1892	McKenna, Francis Patrick.	Jamaica Plain (Boston). 382 Center St.
1893 1912	McKenzie, John Robert...	Cambridge. 897 Mass. Av.
1901	McKibben, William Watson.	Worcester. 390 Main St.
1893 1913	McKoan, John William...	Worcester. 53 Lincoln St.
1914	McLaughlin, Allan Joseph.	Boston. 145 State House.
1914	McLaughlin, Arthur Otis...	Haverhill. 120 Emerson St.
1895	McLaughlin, Henry Valentine	Brookline. Office, Boston. 394 Marlboro' St.
1885	McLaughlin, Joseph Ignatius	Roxbury (Boston). 92 Walnut Av.
1910	McLean, John Allan.......	West Somerville (Somerville). 16 Curtis St.
1915	McLellan, William Edwin..	Lynn. 559 Western Av.
1901	McLeod, John Scott.......	Roxbury (Boston). 151 Warren St.
1913	McMahon, Francis Joseph.	Brookline. 370 Washington St.
1904	McMann, William Henry...	Jamaica Plain (Boston). 328 Center St.
1900	McMurray, Francis Michael	Fitchburg. 267 Main St.
1888	McNally, William Joseph..	Charlestown (Boston). 31 Monument Sq.
1903	McNamara, John James...	Brockton. 231 Main St.
1898	McNeish, Alexander........	Leicester. Pleasant St.
1882	McOwen, William Henry..	Newton Upper Falls (Newton). 280 Elliot St.
1916	McPeake, John Richard...	Mattapan (Boston). 1585 Blue Hill Av.
1905	McPherson, George Edwin.	Medfield. State Hospital.
1903	McPherson, Ross..........	New York, N. Y. 20 West 50th St.
1909	McQuade, Lewis Steele....	Dorchester (Boston). 1081 Blue Hill Av.
1898	McQuaid, Thomas Bernard.	Everett. 487 Broadway.
1910	McRae, Alexander John...	Wilkes-Barre, Pa. City Hospital.
1914	McRobbie, Alexander.......	Lynn. 48 So. Common St.
1905	McSheehy, Theobald Coleman	Worcester. 86 Vernon St.
1917	McWilliams, Norman Beattie	Williamstown.
1897	Mead, Frederick Ammi....	Willimansett (Chicopee). 984 Chicopee St.
1892	Mead, George Nathaniel Plummer	Winchester. 27 Church St.
1903	Mead, Louis Guy..........	Boston. 259 Beacon St.
1912	Means, James Howard.....	Boston. 15 Chestnut St.
1906	Means, Philip Corydon....	Apponaug, R. I.
1917	Medalia, David Bernard...	Boston. 30 Bickerstaff St.
1905	Medalia, Leon Samuel.....	Boston. 483 Beacon St.
1905	Meehan, Patrick Joseph...	Lowell. 228 Worthen St.
1906	Mehan, Joseph Aloysius...	Lowell. 4 Park St.
1894	Meigs, Return Jonathan..	Lowell. 226 Merrimack St.
1906	Mellen, Eleanor Way Allen .	Newton Highlands (Newton). 291 Lake Av.
1911	Mellen, Harry George......	Pittsfield. 150 North St.
1905	Mellus, Edward...........	Newton. 419 Waverley Av.
1905	Mendelsohn, Louis.........	Boston. 362 Commonwealth Av.
1894	Mercer, William James....	Pittsfield. 142 First St.
1917	Meredith, Florence Lyndon	Watertown. 96 Mt. Auburn St.
1916	Mernin, Mary Towler.....	Cambridge. 28 Blake St.
1899	Merriam, Franklin Henry..	South Braintree (Braintree). 37 Holbrook Av.
1893	Merrick, Robert Michael..	Dorchester (Boston). 18 Mt. Ida Road.
1914	Merrill, Adelbert Samuel..	Boston. 244 West Newton St.
1905	Merrill, Ayres Philip......	Pittsfield. 519 North St.
1916	Merrill, Charles Henry....	Lynn. 64 Nahant St.
1917	Merrill, Clyde Harold.....	Marlborough. 103 Mechanic St.
1915	Merrill, Everett Albert....	Lynn. 212 Boston St.
1896	Merrill, William Howe.....	Lawrence. 301 Essex St.
1897	Merritt, Silas Virgil.......	Fall River. 297 Osborn St.
1900	Merritt, Victor Sulviro....	Springfield. 141 Wilbraham Road.
1915	Meserve, Edwin Alonzo....	Watertown. 266 Belmont St.
1883	Messer, Charles Carson....	Turners' Falls (Montague). Avenue A.
1905	Messinger, Harry Carleton.	Providence, R. I. 170 Broad St.
1896	Metcalf, Ben Hicks........	Winthrop. 174 Winthrop St.
1913	Metcalf, Julia Tracy......	Los Angeles, Calif. 101 South Oxford Av.
1914	Metcalf, Richard..........	Providence, R. I. 32 Sargent St.
1912	Metzger, Butler............	Lynn. 153 Lewis St.
1914	Meyer, Edward James.....	Somerville. 18 Bow St.
1917	Meyers, Hyman Bernard..	Chelsea. 174 Chestnut St.
1901	Middleton, Willis Johnson.	Quincy. 446 Washington St.
1885	Mignault, Rodrigue........	Lowell. 534 Merrimack St.
1909	Miles, Charles Gardner....	Brockton. 23 Main St.
1893	Miles, George Albert......	West Somerville (Somerville). 56 Chester St.
1867	Millard, Henry James †1908	North Adams. 81 Church St.
1892	Miller, Charles Herman...	Dorchester (Boston). The Peabody, Ashmont St.
1877	Miller, Ernest Parker.....	Fitchburg. 408 Main St.
1910	Miller, George Fremont....	Boston. 132 Huntington Av.
1895	Miller, Lester Colwell.....	Worcester. 14 Oxford St.

1909 Miller, Percy Farrington...Harwich. Main St.
1912 Miller, Richard Henry.....Boston. 279 Clarendon St.
1900 Miller, Samuel Osgood....Three Rivers (Palmer).
1880 Millet, Charles Sumner...Brockton. 23 Main St.
1915 Millet, John Alfred Parsons........Buffalo, N. Y. 113 High St.
1913 Millett, Frank Albertus...Greenfield 17½ Federal St
1898 Milliken, Charles Warren..Barnstable
1915 Mills, Alfred Ewing.......Somerville. 192 Central St.
1893 Milot, Alphonse François...Taunton. 462 Bay St.
1900 Milot, Wilfrid François....Attleborough. 27 Bank St.
1912 Mindlin, Carl.............Haverhill. 343 Washington St.
1915 Miner, Leroy Matthew Simpson Newtonville (Newton). Office, Boston. 153 Newbury St.
1891 Miner, Worthington Warner Ware. 37 Main St.
1916 Miniter, Francis Gabriel...New York, N. Y. St. Luke's Hospital.
1912 Minot, George Richards...Boston 188 Marlboro' St.
1877 Minot, James Jackson.....Boston 188 Marlboro' St.
1896 Minshall, Arthur Gladstone Northampton. 16 Center St.
1893 Mitchell, Arthur..........Medfield.
1897 Mitchell, Harry Walter....Warren, Pa. State Hosp.
1901 Mitchell, William..........Needham Highlands (Needham).
1908 Mixter, Charles Galloupe..Boston. 180 Marlboro' St.
1881 Mixter, Samuel Jason......Boston. 180 Marlboro' St.
1907 Mixter, William Jason.....Boston. 180 Marlboro' St.
1909 Moeckel, Carl Richard....Lawrence. 443 Broadway.
1904 Moline, Charles............Sunderland.
1911 Monahan, Edward James..Revere. 665 Beach St.
1914 Monahan, John Ambrose...Clinton. 181 Chestnut St.
1913 Moncrieff, William Armitage New Bedford. 142 Merrimack St.
1894 Mongan, Charles Edward..Somerville. 24 Central St.
1880 Monks, George Howard....Boston. 51 Commonwealth Av.
1916 Montague, Charles Elbert..Wakefield. 15 Richardson St.
1907 Monty, Adelbert Howard..Holyoke. 255 Maple St.
1898 1911 Moody, Flora Frost...Springfield. 77 Dartmouth St.
1911 Moore, Frederick Porter...Foxborough. State Hosp.
1911 Moore, George Albert......Brockton. 31 West Elm St.
1915 Moore, George Andrew....Palmer. 92 Thorndike St.
1904 1914 Moore, George Colton.....Boston. 16 Union Park.
1913 Moore, Howard...........Newton. Office, Boston. 272 Newbury St.
1898 Moore, John Henry........Boston. 419 Boylston St.
1914 Moore, Mary Teresa Veronica Brighton (Boston). Office, Boston. 1402 Commonwealth Av.
1901 Moore, Philip Patrick......Gloucester. 58 Middle St.
1903 Mooring, Scott Webber.....Gloucester. 738 Washington St.
1907 Moran, Charles Leo........U. S. Navy.
1872 Moran, John Brennan †1908 Allston (Boston). 168 Allston St.
1911 Morgan, Charles Russell...Boston. 1091 Boylston St.
1885 Morgan, John.............Boston. 39 Huntington Av.
1903 Morgner, Richard August..Fitchburg. 429 Main St.
1917 Moriarty, John Joseph.....Danvers. 5 Page St.
1914 Moriarty, Patrick Maurice. Springfield. 820 State St.
1878 Morong, Arthur Bennett...Boston. 12 Blackwood St.
1891 Morris, George Patrick....South Boston (Boston). 811 Broadway.
1891 Morris, James Stewart.....Revere. 648 Beach St.
1889 Morris, John Gavin........South Boston (Boston). 97 Broadway.
1873 Morris, Michael Augustine..Charlestown (Boston). Office, Boston. 390 Commonwealth Av.
1897 Morris, Richard Hoit......Everett. 39 Corey St.
1907 Morrison, Archibald Benjamin Roxbury (Boston). 547 Blue Hill Av.
1910 Morrison, Hyman..........Dorchester (Boston). 103 Glenway St.
1917 Morrison, Lawrie Byron..Boston. 374 Marlboro' St.
1908 Morrison, Robert Francis..Holyoke. 32 Main St.
1887 Morrison, William Alexander East Boston (Boston). 80 Princeton St.
1913 Morrison, William Reid....Boston. 527 Beacon St.
1916 Morriss, William Sarsfield. Fall River. 565 Broadway.
1892 Morrow, Charles Harvey...Gloucester. 46 Pleasant St.
1906 Morrow, William Robert...Framingham. 21 Irving St.
1898 Morse, Almon Gardner.....Hingham. Office, Boston. 421 Marlboro' St.
1892 Morse, Charles Ellsworth..Wareham. Main St.
1887 Morse, Frank Adelbert.....Lynn. 11 Lincoln St.
1896 Morse, Frank Leander.....Somerville. 78 Highland Av.
1885 Morse, Fred Harris.. .....Winthrop. Office, Boston. 462 Boylston St
1910 Morse, George W...........Boston. 30 Pinckney St.
1878 Morse, Henry Lee..........Medfield. North St.
1910 Morse, Irene May..........Clinton. 124 Water St.
1890 Morse, John Lovett........Boston. 70 Bay State Rd.
1905 1914 Morse, Nathaniel Niles. Mattapan. Office, Boston. 69 Newbury St.
1909 Morse, Roy Sydney........Ashland.
1898 Mosher, Harris Peyton....Boston. 828 Beacon St.
1914 Mosher, Marshall James...Waltham. 925 Main St.
1914 Mossman, George..........Westminster. 66 Main St.
1915 Mott, George Ernest.......Lynn. 12 Bennett Circle.
1916 Moulton, Allen Thomas....Roxbury (Boston). Office, Boston. 483 Beacon St.
1909 Mudge, Otis Pope.........Amesbury. 152 Main St.
1913 Mulcahy, William Edward. Springfield. 247 Eastern Av.
1916 Muldoon, Mary Theresa...Somerville. 351 Broadway.
1908 Mullen, Peter James.......Amesbury. 140 Main St.
1884 Munro, Walter Lee........Providence, R. I. 189 Waterman St.
1906 Munroe, Harrington Bennett Los Angeles, Calif. 7028 Hollywood Boul'vd.
1901 Murdock, Frederick William Brockton. 54 West Elm St.
1908 Murphy, Anna Frances....Worcester. 5 King St.
1903 Murphy, Daniel David....Amesbury. 174 Main St.
1915 Murphy, Daniel Francis...Beverly Farms (Beverly). 28 Vine St.
1914 Murphy, Edward Frederick Roxbury (Boston). 1451 Tremont St.
1904 Murphy, Edward Martin...Lowell. 175 Central St.
1900 Murphy, Edward Vincent..Newport, R. I. 118 Mill St.
1895 Murphy, Emily Frances....Taunton. 23 Summer St.
1884 Murphy, Francis Charles...Boston. 315 Marlboro' St.
1904 Murphy, Frank Augustine..Taunton. 4 Fruit St.
1902 Murphy, Fred Towsley.....St. Louis, Mo. 1806 Locust St.
1905 Murphy, Frederick Paul...Lowell. 219 Central St.
1905 Murphy, Frederick Vincent. Attleborough. 51 Bank St.
1917 Murphy, Harold Alphonsus Jamaica Plain (Boston). 330 Center St.
1913 Murphy, John Joseph.....Cambridge. 3 Norris St.
1882 Murphy, Joseph Briggs....Taunton. 23 Summer St.
1913 Murphy, Joseph Leroy.....Taunton. 23 Summer St.
1905 Murphy, Thomas William..Lawrence. 248 Broadway.
1898 Murphy, Timothy Joseph..Roxbury (Boston). Office, Boston. 520 Beacon St.
1910 Murray, Benjamin Frank..Boston. 6 Beacon St.
1910 Murray, Patrick Joseph....Dorchester (Boston). 162 Harvard St.
1907 Myers, Elizabeth Young... Springfield. 11 St. James Av.
1903 Myers, Samuel William....Boston. 34 McLean St.
1903 Myers, Solomon...........East Boston (Boston). 93 Lexington St.
1904 Myles, Leo Thomas........Cambridge. 146 Oxford St.
1910 Myrick, Alfred Winthrop..Randolph.
1901 Myrick, Hannah Glidden...Roxbury (Boston). N. E. Hospital.
1909 Mysel, Hymen Abraham... Haverhill. 310 Washington St.
1913 Mysel, Philip..............Boston. 20 Prince St.

N

1899 Nason, Arthur Clark......Newburyport. 178 High St.

1895 Nason, Osman Cleander Baker Cambridge. 5 Chester St.
1914 Nathanson, Elias Saul.....Lynn. 242 Summer St.
1908 Neff, Irwin Hoffman......East Norfolk (Norfolk). State Hospital.
1903 Nelligan, John Patrick....Cambridge. 2336 Mass. Av.
1912 Nelson, Christian Augustus.Cambridge. 27 Clinton St.
1908 Nettle, Paul...............Haverhill. 207 Groveland St.
1907 Nevers, Harry Hill........Lawrence. 246 Andover St.
1897 Newell, Franklin Spilman.Boston. 443 Beacon St.
1901 Newhall, Avery Lester....Lynn. 7 Vine St.
1909 Newhall, Harvey Field....Lynn. 51 Nahant St.
1886 Newhall, Herbert William.Lynn. 82 Broad St.
1886 Newhall, Lawrence Thompson Brookfield.
1899 Newton, Aaron Lewis......Northfield.
1914 Newton, Edward Roswell..Somerville. Office, Boston. 419 Boylston St.
1916 Newton, Frank Loomis Sabin Somerville. 34 Highland Av.
1908 Newton, Ralph Waldo.....U. S. Army.
1909 Newton, Roland Stephen...Westborough. 50 West Main St.
1898 Newton, William Curtis...Revere. 596 Beach St.
1917 New, Way Sung..........Boston. Mass. Gen. Hosp.
1870 Nichols, Arthur Howard †1911 Boston. 55 Mt. Vernon St.
1890 Nichols, Edward Hall.....Boston. 294 Marlboro' St.
1892 Nichols, John Holyoke.....Tewksbury. State Infirmary.
1884 Nickerson, George Wheaton Stoneham. 55 Central St.
1902 Nickerson, John Peter.....West Harwich (Harwich).
1871 Nickerson, William Jabez †1910 New Bedford. 164 Middle St.
1911 Nield, William Andrew....New Bedford. 62 Fifth St.
1899 Nielsen, Edwin Björne....West Newton (Newton). Office, Boston. 543 Boylston St.
1900 Nightingale, James........Worcester. 138 Franklin St.
1915 Nigro, Michele.............Chelsea. Frost Hospital.
1915 Niles, Edward Harry......Danvers. 66 Elm St.
1917 Niles, John Otis Garfield..Everett. 304 Ferry St.
1874 Nims, Edward Beecher †1903 Springfield. 40 Harvard St.
1916 Nissen, Harry Archibald..Brookline. 85 Abbotsford Road.
1895 Noble, Anngenette Fowler.Westfield. 21 Noble St.
1915 Noble, Ermy Corser.......Mattapan (Boston). State Hospital.
1906 Noble, Mary Gill..........Mattapan (Boston). State Hospital.
1902 Nolen, Walter Freeman....Boston. 535 Beacon St.
1911 Noonan, William Andrew..Cambridge. 472 Cambridge St.
1914 Normand, Jean Napoleon...Fall River. 183 Hunter St.
1865 Norris, Albert Lane †1907 Malden. 283 Clifton St.
1903 Norris, Albert Perley......Cambridge. 760 Mass. Av.
1916 Norris, Rolf Clarke.......Methuen. 10 Grove St.
1886 Norton, Eben Carver.... Norwood. 792 Washington St.
1903 Norton, George Edward...Cambridge. 102 River St.
1900 Norton, George Paul......Fitchburg. 24 Prichard St.
1910 Norton, Herbert Rozelle...Dorchester (Boston). 11 Bloomfield St.
1917 Noyes, Arthur Perry......Roxbury (Boston). 74 Fenwood Rd.
1881 Noyes, Ernest Henry......Newburyport. 12 Essex St.
1908 Noyes, John Russell.......Brockton. 63 Main St.
1905 Noyes, Margaret Louise... Boston. 101 Newbury St.
1890 Noyes, Nathaniel Kingsbury Duxbury. Washington St.
1917 Nutt, Walter Elwyn.......Methuen. 34 Lowell St.
1914 Nute, Albert James........Boston. U. S. Immigration Station.
1898 Nute, Marion.............Dorchester (Boston). Office, Boston. 483 Beacon St.
1903 Nye, Harry Royal........Leominster. 27 Cotton St.

O

1906 1916 } Oak, Charles Arthur.....Lynn. 183 Franklin St.
1901 Ober, Frank Roberts......Boston. 234 Marlboro' St.
1904 Ober, Ralph Beverley.....Springfield. 76 Maple St.
1912 O'Brien, Carl Robert......Bangor, Me. 6 State St.
1903 O'Brien, Charles Thomas..Woburn. 11 Pleasant St.
1905 O'Brien, Daniel Paul......New Bedford. 330 Union St.
1912 O'Brien, Edward Joseph...Brighton (Boston). Office, Boston. 543 Boylston St.
1917 O'Brien, John Charles.....Greenfield.
1911 O'Brien, Frederick William Brockton. 12 Cottage St.
1903 O'Brien, John Francis.....Charlestown (Boston). Office, Boston. 520 Beacon St.
1911 O'Brien, John Francis.....Fall River. Union Hosp.
1911 O'Brien, John Francis.....Taunton. State Hospital.
1905 O'Brien, Joseph Jeremiah..Dorchester (Boston). 2175 Dorchester Av.
1900 O'Brien, Thomas James...Boston. 501 Beacon St.
1902 O'Brien, Walter John Leo. Jamaica Plain (Boston). 218 South St.
1885 O'Callaghan, Mary Vincent Worcester. 137 Pleasant St.
1905 O'Connell, Andrew Edward Worcester. 518 Main St.
1902 O'Connor, Dennis Francis..Worcester. 340 Main St.
1893 O'Connor, James Bernard..Lowell. 188 Moore St.
1901 O'Connor, John Francis....Worcester. 25 Portland St.
1896 O'Connor, John Henry.....Hyde Park (Boston). 26 Oak St.
1910 1915 } O'Connor, Joseph William Worcester. 13 Elm St.
1911 O'Connor, Patrick Henry..New Bedford. 240 County St.
1903 O'Day, George Frederick...Worcester. 10 Vernon St.
1916 Odeneal, Thomas Helm....Beverly. 163 Cabot St.
1881 O'Donnell, Francis Michael.Newton. 619 Washington St.
1912 O'Donnell, George Thomas.Waltham. 768 Main St.
1914 Oeser, Paul Richard.......Lawrence. 272 Jackson St.
1892 Ogden, Jay Bergen.........New York, N. Y. 1 Madison Av.
1913 O'Hare, James Patrick.....Boston. 536 Commonwealth Av.
1908 O'Keefe, Abbie Mabel......Roxbury (Boston). Office, Boston. 541 Boylston St.
1899 O'Keefe, Daniel Thomas...Jamaica Plain (Boston). 28 Glen Road.
1914 O'Keefe, Edward Scott.....Lynn. 164 Essex St.
1893 O'Keefe, Michael Wallace..East Boston (Boston). 421 Meridian St.
1907 O'Leary, Joseph Augustus..Wakefield. 16 Chestnut St.
1895 Olin, Francis Henry.......Southbridge. Hamilton St.
1912 Olin, Harry...............Roxbury (Boston). 444 Warren St.
1906 Oliver, Everard Lawrence..Boston. 362 Commonwealth Av.
1855 Oliver, Henry Kemble †1898 Boston.
1905 O'Malley, Edward Francis.Fitchburg. 36 Prichard St.
1913 O'Meara, John George.....Providence. R. I. 1547 Westminster St.
1891 O'Meara, Michael John.....Worcester. 17 Wellington St.
1897 O'Neil, Richard Frothingham Boston. 379 Beacon St.
1916 Orcutt, Wallace Lyman....West Newbury. Main St.
1896 Ordway, Charles Anthony..Everett. 346 Main St.
1904 Ordway, Clarence Eugene..Winchester. 371 Main St.
1905 Ordway, Mabel Dyer.......Jamaica Plain (Boston). 6 Parley Vale.
1905 Ordway, Thomas...........Albany, N. Y. Albany Medical College.
1916 O'Reilly, Francis Augustine Lawrence. 249 Haverhill St.
1914 O'Reilly, William Francis..Lynn. 144 South Common St.
1914 O'Rourke, Edward James..Cambridge. 2280 Mass. Av.

1902	Osborne, Caroline Amelia..	Worcester. 145 Woodland St.
1903	Osborne, Ernest Sumner...	West Dennis (Dennis).
1905	Osgood, George............	Cohasset.
1904	Osgood, George Edward....	West Somerville (Somerville). 333 Highland Av.
1892	Osgood, Gilman............	Rockland. 258 Union St.
1901	Osgood, Robert Bayley.....	Boston. 372 Marlboro' St.
1917	Osman, Charles Franklin..	Dorchester (Boston). 83 Columbia Road.
1911	O'Sullivan, Anna..........	Boston. 175 Dartmouth St.
1899	O'Sullivan, John Joseph...	Lawrence. 340 Haverhill St.
1876	Otis, Edward Osgood......	Boston. 381 Beacon St.
1881	Otis, Walter Joseph........	Boston. 267 Beacon St.
1909	O'Toole, John Laurence....	Bradford (Haverhill). 112 Main St.
1894	Ott, George John..........	Boston. 419 Boylston St.
1917	Overholser, Winfred	Westborough. State Hosp.
1913	Overlander, Charles Leonard	Boston. 520 Beacon St.
1910	Overlander, John Eliot.....	Springfield. 84 Maple St.
1899	Overlock, Melvin George...	Worcester. 774 Main St.
1876	Oviatt, George Alexander..	South Sudbury (Sudbury).
1912	Owen, Albert Simpson.....	Framingham. 44 Lincoln St.

P

1895	Packard, Edward Albert...	Boston. 908 Beacon St.
1916	Packard, Fabyan..........	Boston. City Hospital.
1903	Packard, Frederic Henry...	Waverley. McLean Hosp.
1899	Packard, George Henry....	White Rock, N. C.
1907	Packard, Horace...........	Boston. 470 Commonwealth Av.
1913	Packard, Loring Bradford..	Brockton. Brockton Hospital.
1907	Paddock, Brace Whitman..	Pittsfield. 7 North St.
1876	Paddock, William Le Roy.. †1916	Pittsfield. 7 North St.
1893	Page, Albert Kidder.......	Boston. 339 Mass. Av.
1894	Page, Calvin Gates.........	Boston. 128 Marlboro' St.
1870 1892 1909	Page, Charles Whitney †1912	Hartford, Conn. 94 Woodland St.
1898	Page, George Thornton.....	Cambridge. 113 Inman St.
1892	Page, Hartstein Wendell...	Baldwinsville (Templeton).
1898	Pagé, Joseph Gregory Elias	Southbridge. 28 Hamilton St.
1917	Paglia, Jeremiah James, Jr.	Worcester. 80 Shrewsbury St.
1864	Paige, Nomus †1906	Taunton. 74 Winthrop St.
1905	Paine, Alonzo Kingman....	Boston. 80 Bay State Road.
1867	Paine, Amasa Elliott.......	Brockton. 439 Belmont Av.
1910	Paine, Harlan Lloyd.......	Gardner. State Colony.
1908	Paine, Nathaniel Emmons..	West Newton (Newton). 1650 Washington St.
1896	Painter, Charles Fairbank..	Newton. Office Boston. 522 Commonwealth Av.
1904	Palfrey, Francis Winslow..	Boston. 80 Marlboro' St.
1893	Palmer, Ezra..............	Boston. 175 Dartmouth St.
1892	Palmer, George Monroe....	Watertown. 11 Westland Rd.
1882	Palmer, Lewis Merritt.....	Framingham. 62 Concord St.
1888	Palmer, Sarah Ellen.......	Boston. 483 Beacon St.
1912	Palmer, Walter Walker....	Boston. Mass. Gen'l Hosp.
1916	Papas, Prodromos Nicholas	Boston. 384 Commonwealth Av.
1917	Papen, George William....	East Boston (Boston). Relief Station.
1905	Paquin, Joseph Ubalde.....	New Bedford. 1306 Acushnet Av.
1901	Parcher, George Clarence...	Saugus. 319 Central St.
1890	Park, Francis Edwin.......	Stoneham. 350 Main St.
1904	Parker, Ernest Lawrence...	Worcester. 12 Mass. Av.
1914	Parker, Frederick Daniel..	Needham. 101 May St.
1899	Parker, Ralph Walter......	Lowell. 53 Central St.
1914	Parker, Raymond Brewer..	Winthrop. 148 Winthrop St.
1893 1913	Parker, Wallace Asahel...	Bartlett, N. H. Birch Av.
1899	Parker, Walter Henry......	Dorchester (Boston). 1773 Dorchester Av.
1912	Parker, Willard Stephen...	Boston. 128 Bay State Rd.
1887	Parks, Silas Henry........	Great Barrington. 314 Main St.
1892	Parmelee, William Josiah..	Springfield. 108 Calhoun St.
1905	Parr, John................	Methuen. 7 Hampshire St.
1916	Parris, Roland Oliver......	Brookline. 15 Englewood Av.
1880 1915	Parsons, Azariah Worthington	Devine, Texas.
1887	Parsons, Frank Sears......	Dorchester (Boston). 367 Adams St.
1915	Partington, Cyrus Brown...	Fall River. 244 Cherry St.
1914	Partridge, Thomas Jefferson	Cambridge. 11 Magazine St.
1910	Parvey, Benjamin.........	Dorchester (Boston). 6 Glenway St.
1906	Pascoe, William Whelan...	Adams. 67 Summer St.
1892	Patch, William Thurston..	Roxbury (Boston). Office, Boston. 419 Boylston St.
1902	Patten, Stephen Kerr......	Brookline. Office, Boston. 141 Milk St.
1905	Patterson, Alice Maria.....	Hathorne (Danvers). State Hospital.
1900	Patterson, William Francis.	Charlestown (Boston). 401 Main St.
1905	Pattrell, Arthur Ellis......	North Grafton (Grafton).
1899	Paul, Luther Gordon.......	Boston. 321 Beacon St.
1915	Paul, Socrates James.....	Springfield, 549 State St.
1887	Paul, Walter Everard......	Boston. 104 Marlboro' St.
1912	Pavlo, Samuel George.....	Boston. 69 Chambers St.
1891	Payne, James Henry.......	U. S. Navy (retired). Boston. 344 Commonwealth Av.
1907	Peabody, Francis Weld....	Roxbury (Boston). P. B. Brigham Hospital.
1908	Pearce, Arthur Cushing....	Brookline. Office, Boston. 543 Boylston St.
1914	Pearce, George Girdwood..	New Bedford. 18 Seventh St.
1912	Pearl, Samuel Maurice.....	Boston. 67 Chambers St.
1902	Pearson, Charles Lusby....	Newton. Office, Boston. 320 Commonwealth Av.
1891	Pearson, Maurice Wellesley	Ware. 19 Pleasant St.
1899	Pease, Charles Wood......	Needham. 20 Dedham Av.
1892	Pease, Edward Allen.......	Boston. 431 Beacon St.
1906	Pease, Lewis Waite........	Weymouth. 65 Washington St.
1895	Peck, Albert Fred.........	Spencer. Mechanic St.
1916	Peck, Martin William.....	Lynn. 35 Cherry St.
1907	Peck, Roy Hamilton.......	Springfield. 15 Temple St.
1907	Peirce, Bradford Hendrick.	Cambridge. 1717 Cambridge St.
1899	Peirce, George Alphonso...	Tewksbury. State Infirmary.
1889	Peirson, Edward Lawrence.	Salem. 13 Barton Sq.
1908	Pelletier, Alfred George....	Winchendon. 261 Central St.
1913	Pemberton, Frank Arthur..	Boston. 128 Bay State Road.
1906	Penhallow, Dunlap Pearce..	Boston. 46 Gloucester St.
1903	Penny, Herbert Thomas...	Cliftondale (Saugus). 26 Jackson St.
1911	Penny, Mary McDermott...	Cliftondale (Saugus). 26 Jackson St.
1914	Percy, Karlton Goodsell....	Brookline. Office, Boston. 362 Commonwealth Av.
1914	Perkins, Franklin Haskins.	Wrentham. State School.
1907	Perkins, Harry Bradford...	Haverhill. 125 Main St.
1914	Perkins, Roy Stanley......	Lowell. 329 Westford St.
1907	Perkins, Thomas Tounge...	Cliftondale (Saugus). 315 Lincoln Av.
1898	Perley, Roscoe Damon....	Melrose. 63 West Emerson St.
1913	Perras, Louis Adélard.....	New Bedford. 129 Ruth St.

1885	Perry, Arthur Pedro	Jamaica Plain (Boston). Office, Boston. 419 Boylston St.
1911	Perry, Charles Eugene	Haydenville (Williamsburg). Hampshire Co. Sanatorium.
1883 1891	Perry, George Lewis	Athol. 304 Main St.
1913	Perry, Harold Edgar	New Bedford. St. Luke's Hospital.
1896	Perry, Henry Joseph	Brookline. Office, Boston. 45 Bay State Rd.
1891	Perry, Herbert Brainard	Northampton. 187 Main St.
1885	Perry, Martha †1913	Taunton. 68 Broadway.
1908	Perry, Sherman	Tewksbury. State Infir'y.
1916	Persky, Myer Arthur	Providence, R. I. 84 Orms St.
1913	Peter, Alphonse Joseph	Newburyport. 78 Middle St.
1892	Peterson, Charles Augustus Burton	New Bedford. 90 Hillman St.
1913	Peterson, Hugo Oliver	Worcester. 44 Pleasant St
1901	Peterson, John Adna	Hingham.
1909	Pettey, John Anderson	Brockton. 63 Main St.
1914	Pettingill, Olin Sewall	Hebron, Me.
1913	Phaneuf, Louis Eusèbe	Boston. 514 Commonwealth Av.
1912	Phelan, Edward Francis	North Brookfield.
1892	Phelps, John Samuel	Boston. 76 Commonwealth Av
1907	Phelps, Olney Draper	Worcester. 452 Main St.
1892	Phelps, Olney Windsor †1914	Warren. Maple St.
1910	Philbrick, Roscoe Hunter	East Northfield (Northfield).
1901 1915	Phillips, Charles Henry	Beverly. 376 Cabot St.
1907	Phillips, Wilson Frank	Dorchester (Boston). 138 Norfolk St.
1887	Phippen, Hardy	Salem. 84 Washington Sq
1904	Phippen, Walter Gray	Salem. 31 Chestnut St.
1910	Phipps, Cadis	Boston. 31 Mass. Av.
1880	Phipps, Walter Andros	Wollaston (Quincy). 308 Safford St.
1896	Pickard, Isaiah Lovell	Concord Junction (Concord).
1895	Pierce, Appleton Howe	Leominster. 100 West St
1887	Pierce, Frank Benneville	Haverhill. 132 Main St.
1898	Pierce, George Burgess	Boston. P. O. Box 2633.
1882	Pierce, Matthew Vassar	Milton. Canton Av.
1886 1909	Pierce, Willard Henry	Bernardston. Office, Greenfield. 191 Main St.
1908	Pierce-Higgins, Eudora	Taunton. 175 High St.
1914	Pierson, Philip Hale	San Francisco, Calif. 1721 Pacific St.
1886	Pigeon, James Cogswell Du Maresque	Roxbury (Boston). 27 Elm Hill Av
1905	Pike, Forrest Fay	Melrose. 67 Wyoming Av
1892	Pike, Forrest Wiley	Portsmouth, N. H. 4 Pleasant St.
1901 1906	Pike, Winfred Carle	Boston. 82 Huntington Av
1916	Pillsbury, Arthur Russell	Wrentham. State Hosp.
1900	Pillsbury, Boyden Harlin	Lowell. 8 Merrimack St.
1897	Pillsbury, Ernest Dean	West Somerville (Somerville). 8 Curtis St
1909	Pillsbury, Fitzroy Farnsworth	Lowell. 9 Central St.
1870	Pillsbury, George Harlin	Lowell. 58 Central St.
1869	Pinkham, Joseph Gurney	Lynn. 64 Nahant St.
1895	Piper, Frank	Boston. 39 Hancock St.
1910	Piper, Fred Smith	Lexington, 20 Clarke St.
1885	Pitcher, Herbert Frank	Haverhill. 50 Merrimack St
1912	Pitcher, Hervey Brackett	Leominster. 82 Main St.
1901	Pitta, Joao Carlos da Silva	New Bedford. 57 Allen St.
1907	Place, Edwin Hemphill	Boston. 745 Mass. Av.
1899	Place, Ralph Waldo	Somerville. 165 Medford St
1907	Playse, Linn Foss	Hopkinton. 14 Church St.
1879	Plimpton, Lewis Henry	Norwood. 40 Walpole St.
1890	Plummer, Edward Maverick	Charlestown (Boston). 5 Adams St.
1897	Plummer, Frank Joseph	Malden. 162 Ferry St.
1906	Plunkett, Harold Brabazon	Lowell. 9 Central St.
1907	Pofcher, Elias Harry	Worcester. 60 Green St.
1887	Poirier, Emile	Salem. 7 Harbor St.
1915	Poirier, George Henri	Boston. 394 Marlboro' St.
1903	Poirier, Horace	Salem. 173 Lafayette St.
1917	Pollock, Henry Meeker	Boston. Mass. Hom. Hosp.
1902	Pond, Bernard Wesley	Boston. 180 Huntington Av.
1908	Pond, Lucius Beverly	Easthampton. 113 Main St.
1886	Pope, Emily Frances	Boston. 163 Newbury St.
1887	Pope, Frank Fletcher	Ashby.
1911	Popoff, Constantine	Haverhill. 50 Merrimack St.
1892	Porter, Charles Allen	Boston. 116 Beacon St.
1916	Porter, Charles Terrell	Waltham. Office, Boston. 520 Commonwealth Av.
1873 1877	Porter, Frank Edward †1916	Auburndale (Newton). 409 Auburn St.
1903	Porter, Robert Brastow	North Easton (Easton). 4 Day St.
1870	Post, Abner	Boston. 16 Newbury St.
1904	Pote, Leonard Holden	West Somerville (Somerville). 334 Broadway.
1889	Pothier, Joseph Charles	New Bedford. 247 Fourth St.
1901	Potter, Alexander Carleton	Cambridge. Office Boston. 522 Commonwealth Av.
1896	Potter, Frances Wason	Framingham. 11 Lexington Av.
1907	Potter, John Claude	Framingham. 53 Concord St.
1899	Potter, Lester Forest	New Bedford. 278 Union St.
1898	Potts, Joseph Henry	Holyoke. 143 Chestnut St.
1908	Powell, Maud Agatha	Laconia N. H.
1912	Power, George Aloysius	Worcester. 7 Vernon St.
1909	Powers, Edward Parnell	Roxbury (Boston). 1615 Tremont St.
1905	Powers, George Herman	Boston. 298 Marlboro' St.
1905	Powers, H. Hale	Brookline. 68 Davis Av.
1916	Powers, William Joseph	Holyoke. 225 High St.
1910	Praino, Gaetano	Boston. 39 Broadway Extension.
1868	Pratt, Calvin †1908	Bridgewater. South St.
1894	Pratt, Charles Augustus	New Bedford. 60 Orchard St.
1908	Pratt, David Damon	New Bedford. 319 Union St.
1915	Pratt, Emily Adelaide	Roxbury (Boston). 51 Moreland St.
1913	Pratt, Ezekiel	Arlington. 374 Mass. Av.
1892	Pratt, John Washburn	Dedham. St. Paul. Sq.
1898	Pratt, Joseph Hersey	Boston. 317 Marlboro St.
1908	Pratt, Mason Ross	Charlottesville, Va. Univ. Va. Hosp.
1884	Preble, Wallace	Cambridge. 22 Appian Way.
1910	Preble, William Emerson	Boston. 416 Marlboro' St.
1908	Prenn, Joseph	Roxbury. Office, Boston. 536 Commonwealth Av.
1867	Prescott, Charles Dudley †1915	New Bedford. 108 South Ash St.
1886	Prescott, William Herbert	Forest Hills (Boston). 330 Hyde Park Av.
1915	Price, Oscar Jay	Somerville. 345 Highland Av.
1901	Priest, Herbert Bancroft	Ayer.
1907	Prince, Calvin Oliver	Plymouth. 286 Court St.
1861 1866	Prince, James Perrott †1902	Durban, Natal. South Africa.
1879	Prince, Morton	Boston. 458 Beacon St.
1881	Prior, Charles Edwin	Malden. 1 Mountain Av.
1903	Pritchard, William Percival	Fall River. 12 Hudner Bldg.
1896	Procter, Thomas Walter	Sandwich.
1891	Proctor, Francis Ingersoll	Wellesley. Office, Boston. 397 Marlboro' St.

1897 Proctor, John Donald...... Keene, N. H. 61 Winter St.
1898 Proctor, Joseph Whipple... Malden. 235 Clifton St.
1894 Proctor, Percy Clement.... Gloucester. Office, Boston. 514 Commonwealth Av.
1907 Proctor, Thomas Melville.. Wrentham. South St.
1916 Prouty, Ira Humphrey.... Marblehead. 69 Pleasant St.
1900 Provandie, Paul Hector.... Melrose Highlands (Melrose). 8 Ashland St.
1914 Provost, Raoul Gaston..... New Bedford. 126 Mill St.
1912 Pulsifer, Nathan........... Lowell. 40 Middlesex St.
1910 Pulsifer, Walter Hall...... Whitman. Bank Block.
1906 Purvis, Charles Burleigh †1910 Brookline. 1455 Beacon St.
1870 Putnam, James Jackson.... Boston. 106 Marlboro' St.
1877 Putnam, Joseph Morrill †1917 .... Chelsea. West Medford (Medford). 62 Austin St.
1902 Putnam, Ralph............ Winchester. 127 Main St.
1894 Putnam, Willard Abram... Cambridge. 9 Dana St.

Q

1886 Qua, Lester Robert........ Pepperell. Main St.
1890 Quackenboss, Alexander.... Boston. 143 Newbury St.
1913 1917 Quennell, Willard Leslie Tewksbury. State Infirmary.
1905 Quessey, Alfred Henry..... Fitchburg. 64 Prichard St.
1909 Quest, James Francis...... Boston. 176 Huntington Av.
1869 Quinby, Hosea Mason †1911 Worcester 656 Main St.
1903 Quinby, William Carter.... Brookline. Office, Roxbury (Boston) P. B. Brigham Hospital.
1916 Quinn, James Henry...... Springfield. 300 Dickinson St.
1872 1887 Quint, Norman Perkins †1912 West Medway (Medway).

R

1898 Rabe, Edith Ruth Meek Boston. 481 Beacon St.
1914 Rabinovitz, Bernard....... Springfield. 1082 North St.
1912 Rackemann, Francis Minot. Milton. Office, Boston. 263 Beacon St.
1892 Raddin, Frederick Stocker. Chelsea. 448 Broadway.
1917 Rafferty, Thomas Bernard. Lynn. 130 So. Common St.
1892 Rand, John William....... Amesbury. 108 Main St.
1896 Rand, Richard Baxter..... North Abington. (Abington).
1897 Randall, Clifford Walcott.. Worcester. 723 Main St.
1915 Rappoport, Boris.......... Dorchester (Boston). 52 Hewins St.
1896 Rawson, George Wallace... Amherst. 27 Main St.
1907 Raymond, Charles Stanley. Waverley. Sch. Feeble-Minded.
1908 Raymond, Katharine Piatt. Wellesley. Wellesley College.
1904 Raymond, Loring Hay..... Somerville. 146 Highland Av.
1902 Raynes, Myrton Berry..... Melrose. 42 West Emerson St.
1899 Reagh, Arthur Lincoln..... West Roxbury (Boston). 39 Maple St.
1905 Reardon, Daniel Bartholomew Quincy. 22 School St.
1893 Reardon, Timothy Joseph.. Boston. 76 Commonwealth Av.
1917 Record, Harold .... East Braintree (Braintree).
1896 Reddy, Joseph Warren..... South Boston (Boston). 211 K St.
1892 Redmond, James William.. South Boston (Boston). 512 Broadway.
1907 Redmond, Thomas Henry.. Lawrence. 256 Haverhill St.
1916 Reed, Beatrice Alma...... Taunton. State Hospital.
1917 Reed, Carlisle .... Boston. 155 Mass. Av.
1908 Reed, Laurence Bradford.. Plymouth. 20 North St.
1898 Reed, Victor Augustus..... Methuen. Office, Lawrence. 477 Essex St.
1883 Reed, William Gilman..... Southbridge. Main St.

1910 Reese, John Arnold........ Attleborough. Office, Boston. 514 Commonwealth Av.
1916 Reeves, Marcellus......... Boston. 1069 Boylston St.
1913 Regan, James Joseph...... Dorchester (Boston). Office, Boston. 536 Commonwealth Av.
1912 Reggio, André William.... Boston. 40 Fairfield St.
1907 Reid, Isadore Eugene Rosenstein Jamaica Plain (Boston). Office, Boston. 8 Beacon St
1910 Reid, William Duncan..... Newton. 78 Waverley Av
1900 Reilly, James Aloysius..... Dorchester (Boston). 1675 Dorchester Av
1911 Reilly, Thomas Edward.... Marlborough. 6 Newton St
1884 Reynolds, Edward......... Boston. 321 Dartmouth St
1889 Reynolds, Henry Vose...... Brookline. 112 Salisbury Rd
1913 Reynolds, Ralph Leavitte.. Waterville, Me. 207 Main St
1866 Rice, Albert Raymond †1906 Springfield. 36 Temple St
1906 Rice, Allen Galpin......... Springfield. 42 Maple St.
1865 Rice, Austin Bradford †1898 Fiskdale (Sturbridge).
1917 Rice, Florence Frances.... Cambridge. 19 Pleasant St
1893 Rice, Frederick Winslow... Brighton (Boston). 16 Elko St
1908 Rice, John Evarts......... Worcester. 390 Main St
1903 Rice, Robert Astley........ Fitchburg. 2 Crescent St
1896 Rice, Walter Henry........ Boston. 290 Newbury St.
1903 Rich, Charles Edwin...... Lynn. 56 Estes St.
1894 Richards, Caroline Maria.. Cambridge. 21 Magazine St
1913 Richards, Cyril Godfrey.... Boston. Long Island Hospital
1883 Richards, George Edward †1911 Boston. 11 Gloucester St
1893 Richards, George Lyman... Fall River. 124 Franklin St
1891 Richardson, Anna Gove.... Boston. 483 Beacon St.
1903 Richardson, Charles Harper Pittsfield. 8 Bank Row.
1907 Richardson, Cheslie Alvah Clarence West Somerville (Somerville). 731 Broadway
1908 Richardson, Edward Peirson Boston. 224 Beacon St.
1904 Richardson, Frank Linden.. Boston. 543 Boylston St.
1906 Richardson, Horace Kimball Bradford, Me. Box 115.
1896 Richardson, Mark Wyman.. Jamaica Plain (Boston). Office, Boston. 67 Milk St, Room 23
1913 Richardson, Oscar......... Boston. 483 Beacon St.
1867 Richardson, William Lambert Boston. 225 Commonwealth Av
1895 Richmond, Ernest Dalton.. Reading. 24 Woburn St.
1898 Richmond, Simon.......... Roxbury (Boston). 271 Humboldt Av
1914 Riemer, Hugo Bruno Charles Norwood. Office, Boston. 20 Beacon St
1911 Riggs, Austen Fox......... Stockbridge.
1910 Riley, Augustus............ Boston. 857 Beacon St.
1907 Riley, Charles Allen....... Allston (Boston). 1267 Commonwealth Av
1900 Riley, Elizabeth Angela.... Boston. 45 Bay State Rd
1906 Riley, John Henry......... North Adams. 103 Main St
1898 Ring, Arthur Hallam...... Arlington Heights (Arlington)
1917 Riordan, Arthur Hatton... Indian Orchard (Springfield). 162½ Main St
1906 Riordan, Walter Daniel.... Lawrence. 187 Newbury St
1883 Ripley, Frederick Jerome.. Brockton. 12 Cottage St.
1917 Ripley, Harold William... Boston. 82 E. Concord St
1904 Ripley, Horace Greeley.... Taunton. State Hospital.
1903 Ripley, William Littlefield. Brighton (Boston). 19 Oak Sq. Av
1906 Risley, Edward Hammond. Boston. 520 Commonwealth Av
1904 Ritter, Henry............. Springfield. 42 Main St.
1906 Roach, Alfred John........ Tewksbury. State Infirmary

1915 Robb, Hunter.............Cambridge. 56 Brattle St.
1906 Robbins, Chandler.........Boston. 355 Marlboro St.
1880 Robbins, Elliott Daniels....Boston. 88 Tremont St.
1901 Robbins, Elmer Ellsworth..New Bedford. 101 School St.
1907 Robbins, Eugene Stanley...New Bedford. 17 South 6th St.
1891 Robbins, Fred Gibson......Salem. Office, Boston. 129 Marlboro' St.
1906 Robbins, William Bradford.Boston. 355 Marlboro' St.
1897 Roberts, Frederick Alpha..Pittsfield. 230 North St.
1895 Roberts, Linneus Alton.....Dorchester (Boston). 699 Washington St.
1911 Robertson, Ewan Alexander Lowell. 295 Central St.
1914 Robertson, Jessie Wilhelmine Cambridge. 2253 Mass Av.
1895 Robey, William Henry, Jr...Boston. 202 Commonwealth Av.
1900 Robie, Alice Hatheway Purvis Watertown. 102 Mt. Auburn St.
1898 Robie, Walter Franklin....Baldwinsville (Templeton). Pine Terrace Sanatorium.
1914 Robins, Samuel Alexander.Roxbury. 421 Warren St.
1914 Robinson, Henry Ashton...Marlborough. 18 Cotting Av.
1888 Robinson, Lucy Morton †1915 Brockton. 7 Main St.
1911 Robinson, Solomon.........Worcester. 141 Green St.
1890 Robinson, Thomas Johns...Taunton. 56 Broadway.
1893 Robinson, William Henry..Jamaica Plain (Boston). 409 South Huntington Av.
1895 Robinson, William Perry...Haverhill. 1403 Broadway.
1883 1898 } Roche, Thomas Francis...Blackstone.
1908 Roche, Thomas Neil.......New Bedford. 279 County St.
1904 Rochette, Edward Charles..Worcester. 18 Portland St.
1915 Rochford, Grace Elizabeth.Roxbury (Boston). 61 Parker Hill Av.
1914 Rochford, Richard Augustine Springfield. 182 Chestnut St.
1901 Rockwell, Alfred Elijah Perkins Worcester. 248 Main St.
1901 Rockwell, Herbert George.Amherst. 25 Main St.
1917 Rockwell, John Arnold, Jr..Cambridge. 24 Garden St.
1912 Rockwell, Lucy Wetherbee Worcester. 2 King St.
1914 Roderick, Charles Elvin....Taunton. State Hospital.
1914 Rodger, James Yeams.....Lowell. Lowell Gen. Hosp.
1903 Rodrick, Albert Fowler....Fitchburg. 38 Prichard St.
1890 Rogers, Albert Edward.....Boston. 261 Beacon St.
1909 Rogers, Edmund Augustus.Brookline. 303 Tappan St.
1883 Rogers, Frank Alvin.......Everett. 534 Broadway.
1914 Rogers, John Andrews......Nashua, N. H. 63 Main St.
1906 Rogers, Mark Homer......Belmont. Office, Boston. 483 Beacon St.
1873 Rogers, Orville Forrest....Dorchester (Boston). 465 Washington St.
1914 Rogers, Orville Forrest, Jr..Dorchester (Boston). Office, New Haven, Conn. 90 High St.
1890 Rolfe, William Alfred.....Boston. 330 Dartmouth St.
1902 Rollins, Edwin Theodore...Jamaica Plain (Boston). 17 Gordon St.
1916 Roney, Hugh Beverly.....Pittsfield. 130 East Housatonic St.
1910 Rood, Adulphus Duncan...Whitman. 414 South Av.
1907 Rood, Luther Colby.......Dorchester (Boston). Office, Boston. 419 Boylston St.
1914 Root, Raymond Richmond.Georgetown. 34 East Main St.
1868 Root, Richmond Barbour †1917...Georgetown. 24 North St.
1917 Ross, Elizabeth ....Cambridge. 10 Chauncy St.
1902 Rose, William Henry......Worcester. 13 Elm St.
1904 Rose, William Milton......Cambridge. 230 Prospect St.
1910 Rosen, David William......Boston. 321 Hanover St.
1911 Rosenau, Milton Joseph....Brookline. Office, Roxbury (Boston). 240 Longwood Av.
1907 1910 1914 } Rosenbloom, Carl Webber.Holyoke. 245 Maple St.
1914 Rothblatt, Harry Lewis....Boston. 13 Allen St.
1907 Roughan, Charles Michael..Lowell. 29 Bridge St.
1885 Round, Arthur Morey......Norton. Taunton Av.
1914 Rounseville, Wilfred Ellsworth Attleborough. 40 Bank St.
1906 Rowe, Carleton Allen......Milton. 464 Adams St.
1892 Rowen, Henry Stanislaus..Brighton (Boston). Office, Boston. 520 Beacon St.
1917 Rowland, Edward Gould..Natick. 54 W. Central St.
1897 Rowley, William..........Lanesville (Gloucester). 1087 Washington St.
1906 Roy, Joseph Napoleon.....Webster. 38 Main St.
1895 Royal, Herbert Benjamin Harvard. Still River Rd.
1908 1915 } Rubin, Solomon Hyman... Roxbury (Boston). 582 Blue Hill Av.
1916 Ruble, Wells Allen........Melrose. N.E. Sanatorium.
1868 1891 } Ruddick, William Henderson †1914 South Boston (Boston). 502 Broadway.
1913 Ruel, Joseph Adjutor......Haverhill. 14 Main St.
1905 Rumrill, Samuel Dudley...Springfield. 346 Rimmon Av.
1892 Ruppel, Carl Emil Fraser..Lynn. 23 Nahant St.
1888 Ruppel, Myra Daniel..... Lynn. 23 Nahant St.
1906 Rushford, Edward Allan...Salem. 175 Lafayette St.
1908 Rushmore, Stephen........Boston. 522 Commonwealth Av.
1898 Russell, Edward Ervin.....North Adams. 127 River St.
1906 Russell, Frederick James...Brandon, Vt. State Sch.
1899 Russell, Simon James......Springfield. 154 Chestnut St.
1905 Russell, Walter Burton....Springfield. 796 State St.
1904 Ruston, Warren Dunn......West Somerville (Somerville). 744 Broadway.
1886 Ryan, Dennis Matthew.....Ware. 38 Pleasant St.
1910 Ryan, Sylvester Edward...Springfield. 13 Hancock St.
1912 Ryan, William Francis.....Lowell. 219 Central St.
1913 Ryan, William Patrick.....Holyoke. 260 Maple St.
1914 Ryder, Bernadette McWeeny Boston. 483 Beacon St.
1906 Ryder, Delano Richmond...Fall River. 151 Rock St.
1901 Ryder George Hale........Quincy. Office, Boston. 320 Commonwealth Av.
1882 Ryder, Godfrey............Malden. 321 Pleasant St.
1914 Ryder, Walter Irenaeus....Boston. 483 Beacon St.

S

1873 Sabine, George Krans......Brookline. 30 Irving St.
1898 Sabine, Jane Downes Kelly.Boston. 348 Marlboro' St.
1911 Sadler, Roy Angelo........Boston. 652 Mass. Av.
1915 Safford, Moses Victor......Jamaica Plain (Boston). 15 Grovenor Rd.
1904 Safford, Wilber Pray......Brockton. 52 Pleasant St.
1895 St. Clair, Austin Emery....Framingham. 63 Concord St.
1894 St. Denis, Joseph Nelson...Mattapan (Boston). 74 Blue Hill Av.
1893 St. Germain, Joseph Pierre.New Bedford. 13 South 6th St.
1898 1917 } St. Marie, Phillipe.......Taunton. 413 Bay St.
1912 Salles, John Murray.......New Bedford. 113 Grinnell St.
1916 Saltz, Sidney Myer.......Boston. 113 Chambers St.
1917 Salvin, Louis Wilton......Roxbury (Boston). 558 Warren St.
1909 Sanborn, Byron...........Topsfield. Central St.
1876 Sanborn, Edwin Aaron †1915 Somerville. 24 Franklin St.
1902 Sanborn, George Phippen..Boston. 320 Commonwealth Av.
1897 Sanborn, John Wesley.....Roxbury (Boston). 168 Humboldt Av.
1881 Sanborn, Perley Lewis.....Marblehead. 79 Pleasant St.
1870 Sanders, Charles Barton †1909 Lowell. 475 Westford St.
1909 Sandler, Samuel...........Fall River. 298 Third St.
1904 Sanger, Guy Edward.......Arlington. 1026 Mass. Av.

1893	Sargent, Ara Nathaniel	Salem. 116 Federal St.
1889	Sargent, George Amory	Boston. 46 Hereford St.
1896	Sargent, George Bancroft	Lawrence. 51 Jackson St.
1907	Sargent, Oscar Franklyn Libbey	Lawrence. 105 Exeter St.
1905	Sargent, Walter Leslie	Quincy. 1155 Hancock St.
1913	Saunders, Edmund Louis	Brookline. Office, Boston. 46 Gloucester St.
1908	Savignac, Arthur Noël	Amesbury. 80 Friend St.
1884	Sawin, Charles Dexter	Somerville. 390 Broadway.
1892	Sawin, Robert Valentine	Brimfield.
1907	Sawyer, Alpha Reuben	Roslindale (Boston). 6 Conway St.
1883	Sawyer, Edward Allen	Gardner. 402 Elm St.
1901	Sawyer, Edward Keyes	Boston. 419 Boylston St.
1884	Sawyer, Elihu LeRoy	Roslindale (Boston). 6 Conway St.
1891	Sawyer, Walter Fairbanks	Fitchburg. 67 Prichard St.
1888	Sayles, Joseph Borland	Taunton. 35 City Square.
1896	Scales, Robert Bass	Dorchester (Boston). 546 Washington St.
1917	Scanlon, Joseph Michael	Lawrence. 301 Essex St.
1905	Scanlan, Thomas John	Dorchester (Boston). Office, Boston. 543 Boylston St.
1903	Scannell, David Daniel	Boston. 366 Commonwealth Av.
1916	Scarito, Nicholas Julius	Lawrence. 125 Haverhill St.
1912	Schadt, George Leonard	Springfield. 15 Edwards St.
1910	Schillander, Carl Axel	Springfield. 293 Bridge St.
1910	Schirmer, Joseph Walter	Boston. 272 Newbury St.
1900	Schmidt, Frederick Sextus	Roxbury (Boston). 179 School St.
1906	Schmidt, Richard Diedrich	Dorchester (Boston). 16 River St.
1909	Schneider, Harry Albert	Pittsfield. 30 North St.
1898	Schneider, Jacob Philip	Palmer. 10 Thorndike St.
1905	Schofield, Otho Lester	Wellesley Hills (Wellesley).
1915	Schofield, Roger William	Worcester. 771 Main St.
1900	Schorer, Cornelia Bernhardine Johanna	Roxbury (Boston). 74 Fenwood Rd.
1879	Schwab, Emanuel	Cincinnati, O. 2732 Woodburn Av.
1916	Schwartz, George Harvey	East Boston (Boston). 43 Princeton St.
1907	Schwartz, Myer	Lawrence. 118 Franklin St.
1895	Scoboria, Arthur Gilmore	Chelmsford.
1885	Scofield, Walter W	Dalton. Main St.
1910	Scott, George Henry	Roxbury (Boston). 476 Warren St.
1915	Scott, Norman McLean	Boston. 536 Commonwealth Av.
1882	Scribner, Ernest Varian	Worcester. State Hospital.
1887	Scudder, Charles Locke	Boston. 209 Beacon St.
1884	Sears, George Gray	Boston. 426 Beacon St.
1897	Sears, Harry Edward	Beverly. 25 Broadway.
1887	Sears, Henry Francis	Boston. 86 Beacon St.
1905	Seaver, Edwin Pliny, Jr.	New Bedford. 179 William St.
1914	Seavey, Hollis Lester	Cambridge. 1879 Mass. Av.
1917	Sedgley, Frank Robert	West Roxbury (Boston). 19 Mt. Vernon St.
1889	Seelye, Ralph Holland	Springfield. 73 Chestnut St.
1902	Seelye, Walter Clark	Worcester. 390 Main St.
1915	Segall, Samuel Kelman	New Bedford. 1208 Acushnet Av.
1905	Segur, Willard Blossom	Enfield. Bridge St.
1917	Seibels, Robert Emmett	Springfield. 97 Chestnut St.
1908	Senesac, Archibald Napoleon	New Bedford. 1007 South Water St.
1914	Sennott, John Ralph	Cambridge. 321 Broadway.
1901	Sever, James Warren	Cambridge. Office, Boston. 234 Marlboro' St.
1913	Sewall, Edgar Floyd	Somerville. 281 Broadway.
1904	Seymour, Malcolm	Boston. 362 Commonwealth Av.
1911	Shadman, Alonzo Jay	West Roxbury (Boston). 1857 Center St.
1916	Shain, Arthur Irving	Roxbury (Boston). 538 Warren St.
1881	Shanahan, John	Peabody. 69 Main St.
1896	Shanahan, Thomas Joseph	Brookline. 155 Aspinwall Av.
1910	Shanahan, Timothy Joseph	Somerville. Office, Boston. 419 Boylston St.
1915	Shanks, Charles	New Bedford. 645 Kempton St.
1913	Shannahan, Richard Joseph	Worcester. 925 Main St.
1894	Shannon, Nat Vaughan	Cambridge. 891 Mass. Av.
1915	Shapira, Albert Abraham	Boston. 583 Beacon St.
1914	Shapira, Victor Isaiah	Dorchester (Boston). Office, Boston. 100 Huntington Av.
1891	Shatswell. James Arthur	Beverly. 9 Endicott St.
1895	Shattuck, Albert Milo	Worcester. 21 High St.
1873	Shattuck, Frederick Cheever	Boston. 135 Marlboro' St.
1873	Shattuck, George Brune	Boston. 183 Beacon St.
1908	Shattuck, George Cheever	Boston. 205 Beacon St.
1907	Shaw, Adam Ernest	Lowell. 137 Merrimack St.
1893	Shaw, Albert Joel	Boston. 79 Mountfort St.
1893	Shaw, Arthur John	Boston. 551 Boylston St.
1915	Shaw, Francis	Somerville. 57 Cross St.
1904	Shaw, John Port	Brockton. 6 North Main St.
1909	Shaw, John William	Newburyport. 7 Orange St.
1897	Shaw, Thomas Bond	Worcester. 24 Oxford St.
1877	Shaw, Thomas Pierpont †1909	Lowell. 110 Eighteenth St.
1908	Shay, Charles Edwin	Roxbury (Boston). 136 Warren St.
1895	Shay, Thomas Maguire	Roxbury (Boston). 88 Warren St.
1897	Shea, John Joseph	San Diego, Calif. 2417 "M" St.
1906	Shea, Michael Ignatius	Chicopee Falls (Chicopee). 112 Belcher St.
1902 1912	Shea, Peter Owen	Worcester. 106 Millbury St.
1909	Sheahan, George Maurice	Quincy. 12 School St.
1916	Sheehan, Edward Bernard	Roxbury (Boston). Office, Boston. 520 Beacon St.
1897	Sheehan, Martin David	Stoneham. 34 Pleasant St.
1893	Sheehan, William Joseph	Salem. 146 Federal St.
1905	Sheehan, William Joseph	South Boston (Boston). 355 West 4th. St.
1876	Sheldon, Chauncey Coolidge	Lynn. 73 North Common St.
1912	Sheldon, Russell Firth	Boston. 31 Pinckney St.
1912	Shepherd, William Gordon	Ontario, Canada.
1911	Sheppard, Philip Albert Edward	Dorchester (Boston). Office, Boston. 419 Boylston St.
1904	Sherburne, Andrew Edward	Dorchester (Boston). 46 Brent St.
1913	Sheridan, Philip Edward Anthony	South Boston (Boston). 580 Broadway.
1882	Sherman, Frank Morton	West Newton (Newton). 11 Fairview Ter.
1894	Sherman, Mary Hastings	Brookfield.
1907	Sherman, Warren Hunter	Westford.
1914	Shields, Ellwood Emlen	Annisquam (Gloucester). 39 Leonard St.
1917	Shields, Warren Sylvester	Boston. 106 E. Brookline St.
1916	Shine, Honoria Kennelly	Holyoke. 78 Nonotuck St.
1916	Shinn, Philip Allen	Gloucester. 123 Main St.
1910	Shoemaker, Amzi Bedell	North Attleborough. 123 Commonwealth Av.
1906 1916	Shohan, Joseph	Boston. 366 Commonwealth Av.
1905	Shoninger, Lee Simon	New York, N. Y. 41 West 55th St.
1894	Shores, Harvey Towle	Northampton. 78 Main St.
1869	Shreve, Octavius Barrell †1906	Salem. 29 Chestnut St.

1897	Shultis, Frederick Charles	Leominster. 20 Main St.
1908	Sibley, Benjamin Ernest	Brookline. 1595 Beacon St.
1916	Silberman, Maurice	Revere. 113 Shirley Av.
1896	Silva, Francis Pierce	Charlestown (Boston). 206 Main St.
1916	Silver, Louis Serebriany	Malden. 230 Bryant St.
1901	Simmons, Channing Chamberlain	Boston. 317 Marlboro' St.
1914	Simmons, Edward Burnside	Worcester. 900 Main St.
1905	Simmons, Fred Albert	Brockton. 63 Main St.
1903	Simmons, Hannah Coralynn	Worcester. 900 Main St.
1914	Simmons, Ralph Hayward	Fall River. Union Hospital.
1912	Simon, Arthur Leslie	Lawrence. 24 Buswell St.
1917	Simon, Harold Francis	Winchester. 69 Church St.
1915	Simonds, Frederick Artemas	Cambridge. 1311 Mass. Av.
1885	Simpson, Charles Edward	Lowell. 9 Central St.
1890	Simpson, James Edwin	Salem. 26 Chestnut St.
1903	Sims, Frederick Robertson	Melrose. 79 West Foster St.
1905	Sinclitico, Guiseppe	Lawrence. 3 Jackson Ter.
1903	Sise, Lincoln Fleetford	Medford. Office, Boston. 69 Newbury St.
1896	Siskind, Alexander Louis	Lawrence. 272 Broadway
1913	Sisson, Mitchell	East Boston (Boston). 26 Princeton St.
1917	Sisson, Walter Richard	Boston. 270 Bay State Rd.
1863	Skinner, Edward Manning †1903	Boston. 586 Mass. Av.
1915	Skirball, Louis Irving	Revere. 146 Shirley Av.
1917	Skirball, Joseph Jacob	Revere. 146 Shirley Av.
1904	Slack, Francis Hervey	Brookline. 227 Summit Av.
1913	Slattery, John Richard	South Boston (Boston). Office, Boston. 520 Beacon St.
1905	Sleeper, Frank Warren	Dorchester (Boston). 41 Virginia St.
1906	Slutskin, Maurice Louis	Springfield. 120 Main St.
1900	Small, Albert Ernest	Melrose. 90 West Emerson St.
1908	Smalley, Fred Lyman	Reading. 36 Woburn St.
1915	Smillie, Wilson George	Cambridge. Office, Roxbury. 240 Longwood Av.
1898	Smith, Alfred Charles	Brockton. 47 W. Elm St.
1893	Smith, Charles Morton	Boston. 437 Marlboro' St.
1900	Smith, Charlotte Stewartson	Manchester, N. H. 46 Hanover St.
1916	Smith, Chiron Waterville	Marlborough. 38 West Main St.
1914	Smith, Conrad	Boston. 143 Newbury St.
1901	Smith, Edward Shepard	Westfield. 3 Court St.
1916	Smith, Edwin Eugene	Quincy. 899 Hancock St.
1912	Smith, Edwin Wallace	Boston. 19 Bay State Rd.
1915	Smith, Ernest Elmer	Webster. 7 Whitcomb St.
1902	Smith, Forster Hanson	Lowell. 832 Merrimack St.
1900	Smith, Frank Herbert	Hadley.
1894	Smith, Frank Simpson	Pittsburg, Pa. 5217 Baum Boulevard.
1895	Smith, Fred Stevens	North Andover. 5 Third St.
1894	Smith, Frederick Glazier	Somerville. 145 Highland Av.
1882	Smith, George Carroll	Boston. 483 Beacon St.
1910	Smith, George Gilbert	Boston. 99 Commonwealth Av.
1903	Smith, Hervey Lewis	Springfield. 249 Union St.
1885 1892	Smith, Hiram Fred Markley	Orange. 155 South Main St.
1901	Smith, Howard Harry	Boston. 845 Boylston St.
1906	Smith, John Hall	Cambridge. Office, Boston. 657 Boylston St.
1910	Smith, John Jay	Cambridge. 16 Pleasant St.
1917	Smith, Lillian Richardson	Worcester. Belmont Hosp.
1887	Smith, Mary Almira	Boston. 33 Newbury St.
1889	Smith, Murdoch Campbell	Lynn. 3 Lee Hall.
1906	Smith, Myrtle	Shrewsbury.
1897	Smith, Peter Matthew	Boston. 758 Tremont St.
1917	Smith-Petersen, Marius Nygaard	Boston. 166 Newbury St.
1908	Smith, Richard Mason	Boston. 329 Beacon St.
1874	Smith, Samuel Finley	Indian Orchard (Springfield). 97 Myrtle Av.
1906	Smith, Stafford Baker	New York, N. Y. 160 West 87th St.
1894	Smith, Thomas Burke	Lowell. 107 Merrimack St.
1884	Smith, Walter Anson	Springfield. 185 State St.
1914	Smith, William David	Gardner. Office, Boston. 99 Commonwealth Av.
1898	Smith, William Henry	Brookline. Office, Boston. 8 Marlboro' St.
1891	Smith, William Lord	North Grafton (Grafton). Office, Boston. 2 Newbury St.
1894	Smithwick, Marsena Parker	Lexington. Office, Boston. 483 Beacon St.
1902	Smyser, Charles James	New Wilmington, Pa.
1911	Smyth, Duncan Campbell	Brookline. Office, Boston. 127 Newbury St.
1905	Smyth, Patrick Somers	Brookline. Office, Boston. 69 Newbury St.
1903	Snow, Frank Whipple	Newburyport. 24 Essex St.
1899	Snow, Frederick Stedman	Roxbury (Boston). 151 Townsend St.
1908	Sobotky, Irving	Boston. 636 Beacon St.
1915	Solomon, Harry Caesar	Jamaica Plain (Boston). Office, Boston. 520 Beacon St.
1876	Somers, John Edward	Cambridge. 1979 Mass. Av.
1894	Sopher, Curtis Levi	Wakefield. 6 Avon St.
1897	Soule, Horace John	Winthrop. 180 Winthrop St.
1904	Southard, Elmer Ernest	Cambridge. Office, Roxbury (Boston). 240 Longwood Av.
1904	Southard, Mabel Austin	Cambridge. 70 Francis Av.
1900	Soutter, Robert	Boston. 133 Newbury St.
1917	Sowles, Horace Kennedy	Boston. Mass. Gen. Hosp.
1904	Spaid, Charles Jacob	Springfield. 344 Belmont Av.
1897	Spalding, Fred Maurice	Brookline. Office, Boston. 39 Huntington Av.
1903	Spalding, Roger	Duxbury. Washington St.
1884	Sparhawk, Clement Willis	Danvers. 148 Locust St.
1914	Sparks, Ernest Elliot	Cochituate (Framingham). Main St.
1910	Sparrow, Charles Atsatt	Worcester. 744 Main St.
1910	Spaulding, Edith Rogers	Framingham. P. O. Box 99.
1911	Spaulding, John Doliver	Boston. 780 Beacon St.
1907	Spear, Louis Mahlon	Brookline. Office, Boston. 483 Beacon St.
1915	Spinney, Frederic Ira	Boston. 4 Columbus Sq.
1909	Spooner, Lesley Hinckley	Hingham. Main St.
1865	Sprague, Francis Peleg	Boston. 229 Commonwealth Av.
1873 1891	Sprague, Rufus William	Charlestown (Boston). 376 Main St.
1913	Sprague, Russell Bradford	Boston. 522 Commonwealth Av.
1904	Sproull, John	Haverhill. 50 Merrimack St.
1879	Squier, Angelo Orin	Springfield. 293 Bridge St.
1892	Stacey, Charles Franklin	Boston. 456 Audubon Rd.
1902	Stack, Charles Francis	Hyde Park (Boston). 1315 River St.
1908	Stack, John Joseph	Boston. 640 Huntington Av.
1913	Stafford, Frank Dalmon	North Adams. 56 Summer St.
1907 1917	Stammers, Joseph Collins	New York, N. Y. 117 W. 79th St.
1880	Standish, Myles	Boston. 72 St. James Av.
1909	Stanley, Francis Guy	Beverly. 144 Cabot St.
1895	Stanley, Josiah Murch	Northborough. Main St.
1907	Stansfield, Clarence Winfield	Fall River. 1274 North Main St.
1915	Stansfield, Oliver Holt	Worcester. 28 Pleasant St.
1903	Stanton, Joseph	Brighton (Boston). Office, Boston. 520 Beacon St.

1908	Stanwood, Frederic Arthur	Wellesley Hills (Wellesley). 342 Washington St.
1905	Staples, Clarence Hathorne	Malden. 339 Pleasant St.
1893	Stapleton, Richard Henry	Worcester. 146 Franklin St.
1893	Starbird, Edward Perley	Dorchester (Boston). 9 Monadnock St.
1910	Stearns, Albert Warren	Billerica. Office, Boston. 520 Commonwealth Av.
1903	Stearns, Robert Thomas	Mattapan (Boston). 24 Hazelton St.
1868	Stebbins, George Stanford †1905	Springfield. 17 Maple St.
1874	Stedman, George	Boston. 1069 Boylston St.
1874	Stedman, Henry Rust	Brookline. Office, Boston. 48 Beacon St.
1892	Stedman, Joseph Cyrus	Jamaica Plain (Boston). 7 Lakeville Pl.
1901	Steele, Albert Edward	Roslindale (Boston). 61 Robert St.
1916	Steele, George Louis	West Springfield. 16 Boulevard St.
1913	Steeves, Ernest Colpitt	Essex. Main St.
1907	Stephens, Frederick Newton	Somerville. Office, Boston. 527 Beacon St.
1883	Stephenson, Franklin Bache †1913	U. S. Navy (retired). Claremont, Calif. 425 Harvard Av.
1914	Sternberg, Joseph Edward	Roxbury (Boston). Office, Boston. 100 Boylston St.
1898	Stetson, Frank Eliot	New Bedford. 334 Union St.
1898	Stetson, Frederick Winslow	Roxbury (Boston). 504 Warren St.
1896	Stetson, Halbert Greenleaf	Greenfield. 17½ Federal St.
1869	Stevens, Andrew Jackson	Malden. 599 Main St.
1894	Stevens, Charles Benjamin	Worcester. 61 Pearl St.
1868	Stevens, Edmund Horace	Cambridge. 1911 Mass. Av.
1874	Stevens, George Beckwith †1911	Dorchester (Boston). 346 Seaver St.
1906	Stevens, Harold Elmer Ellsworth	Lewiston, Me. 671 Main St.
1897	Stevens, Henry Burt	West Roxbury (Boston). Office, Boston. 419 Boylston St.
1891	Stevens, Henry Lawrence	New Bedford. 129 Purchase St.
1908	Stevens, Horace Paine	Cambridge. 1 Waterhouse St.
1899	Stevens, Ralph Emerson	Marlborough. 133 West Main St.
1897	Stevens, Sara Elmina	West Roxbury (Boston). 31 Linnet St.
1886	Stevens, Seriah	Roslindale (Boston). 942 South St.
1915	Stevens, William Russell	Abington. 64 Center Av
1914	Stevenson, Effie Allyne	Stamford, Conn. Stamford Hall.
1904	Stevenson, Willis Mack	North Easton (Easton). Lincoln St.
1909	Stewart, Ralph Carroll	Lowell. 408 Middlesex St.
1909	Stewart, Vernon Champney	Woburn. 16 Summer St.
1903	Stick, Henry Louis	Baldwinsville (Templeton).
1881	Stickney, Clifford Webster	Holden. Main St.
1892	Stickney, Edwin Pangman	Arlington. 58 Pleasant St.
1884	Stickney, George Augustus	Beverly. 205 Cabot St.
1891	Stiles, Fred Merritt	Waltham. 292 Moody St.
1908	Still, Carroll Wilder	Haverhill. 156 Main St.
1880	Stimson, John Woodbury	Fitchburg. 101 Prichard St.
1899	Stockwell, Herbert Emmons	Stockbridge. Main St.
1899	Stoddard, Mortimer Joseph	Springfield. 106 Bay St.
1914	Stokes, Leroy Tyler	Haverhill. 355 Washington St.
1887	Stone, Arthur Kingsbury	Framingham Center. Auburn St.
1893	Stone, Byron	North Oxford (Oxford).
1886	Stone, Frank Ellsworth	Lynn. 92 So. Common St.
1910	Stone, George Henry	Roxbury (Boston). P. B. Brigham Hospital.
1914	Stone, Henry Edward	Dorchester (Boston). 41 Fowler St.
1894	Stone, James Savage	Boston. 234 Marlboro' St.
1912	Stone, Jane Gray	Jamaica Plain (Boston). 821 Center St.
1854	Stone, Lincoln Ripley †1907	Newton. 131 Vernon St.
1896	Stone, Moses Cornelius †1908	Wellesley. 18 Belair St.
1905	Stone, Ralph Edgarton	Beverly. 360 Cabot St.
1909	Stone, Thomas Newcomb	Haverhill. 28 White St.
1905	Stoneman, Edgar Amos	Springfield. 14 Clinton St.
1888	Storer, Malcolm	Boston. 476 Boylston St.
1906	Storrs, Henry Randolph	Vancouver, B. C. 850 Hastings St. W.
1891	Stowell, Edmund Channing	Marlborough, N. H.
1903	Stowell, Frank Edgar	Worcester. 19 Elm St.
1895	Stowell, Joab	North Amherst (Amherst).
1892	Stowell, Sarah Russell	Marlborough, N. H.
1902	Stratton, Ralph Ricker	Melrose. 654 Main St.
1904	Street, Charles Edward	Springfield. 2 Maple St.
1900	Street, Lionel Alexander Burnet	Shanghai, China. 15 Wanghoo Road.
1914	Streeter, Edward Clark	Boston. 280 Beacon St.
1905	Streeter, John Frank	Springfield. 55 Walnut St.
1917	Streeter, Howard Alvertus	Pittsfield. 740 Dalton Av.
1913	Strong, Richard Pearson	Office, Roxbury. 240 Longwood Av.
1915	Strong, Seth Lake	Marshfield Hills (Marshfield). Summer St. Office, Boston. 228 Newbury St.
1886	Stuart, Frederic William	South Boston (Boston). Boston. 236 Clarendon St.
1880 1890	Stuart, James Henry †1917	Boston. 236 Clarendon St.
1898	Stubbs, Frank Raymond	Newton. 510 Center St.
1898	Sturgis, Benjamin Franklin, Jr.	Salem. 28 Pleasant St.
1896	Sturgis, Walter Horatio Wakeman	Allerton (Hull).
1905	Sturnick, Max	Dorchester (Boston). 12 Columbia Rd.
1892	Stutson, William Peckham †1915	Cummington. Main St.
1899	Sughrue, Dennis Francis	Roxbury (Boston). 430 Dudley St.
1911	Suitor, Henry Albert	South Deerfield (Deerfield). Graves Av.
1910	Sullivan, Andrew Joseph	Brockton. 155 Main St.
1907	Sullivan, Charles Brent	Boston. 520 Beacon St.
1906	Sullivan, Cornelius Augustine	South Braintree (Braintree). 835 Washington St.
1903 1914	Sullivan, Edward Coppinger	Springfield. 317 Main St.
1915	Sullivan, Elizabeth Ann	Framingham. Reformatory for Women.
1916	Sullivan, Eulick Francis	Holyoke. 115 Suffolk St.
1903	Sullivan, Florence Augustine	Haverhill. 42 White St.
1914	Sullivan, Francis Augustus	Cambridge. 376 Cambridge St.
1883	Sullivan, James Edmund	Providence, R. I. 254 Wayland Av.
1915	Sullivan, John Albert	Pittsfield. 72 Summer St.
1901	Sullivan, John Joseph	Dorchester (Boston). 93 Bowdoin St.
1906 1916	Sullivan, John Joseph	Lawrence. 301 Essex St.
1907	Sullivan, John Thomas	Dorchester (Boston). Office, Boston. 520 Beacon St.
1913	Sullivan, Joseph Cornelius	Springfield. Mercy Hosp.
1905	Sullivan, Joseph Lawrence	Roxbury (Boston). 89 Waverley St.
1913	Sullivan, Leo Jeremiah	Fall River. 379 Whipple St.
1909	Sullivan, Martin George	Winchendon. 216 Central St.
1891	Sullivan, Michael Francis	Lawrence. 15 Pine St.

1913	Sullivan, Patrick Joseph	Dalton. 10 Carson Av.
1889	Sullivan, William Joseph	Lawrence. 267 Essex St.
1901	Sumner, Harry Herbert	Lowell 4 Merrimack Sq.
1896	Sumner, Philip Sosnoski	Boston. 28 Westland Av.
1917	Sundelöff, Ester Mathilda Eleonora	Roxbury (Boston). 88 Moreland St.
1910	Supple, Edward Augustine	Boston. 409 Marlboro' St.
1917	Swaim, Loring Tiffany	Cambridge. 8 Coolidge Hill Road.
1900	Swain, Howard Townsend	Boston. 226 Commonwealth Av.
1865	Swan, Charles Walter †1903	Brandford, Conn. 19 Elm St.
1908	Swan, Lawrence Clarke	Beverly. 23 Bow St.
1882	Swan, Roscoe Wesley	Worcester. 4 Harvard St.
1885	Swan, William Donnison	Cambridge. 167 Brattle St.
1891	Swasey, Edward	Worcester 390 Main St.
1863	Swasey, Oscar Fitzallan †1900	Beverly. 24 Hale St.
1912	Sweeney, Bartholomew Philip	Leominster. 30 Water St.
1911	Sweeney, Michael Thomas	Atlantic (Quincy). 365 Hancock St.
1895	Sweet, Frederick Benoni	Springfield. 81 Chestnut St.
1893	Sweetsir, Charles Leslie	Lowell. 276 Westford St.
1889	Sweetsir, Frederick Ellsworth	Merrimac. 21 Main St.
1907	Swift, Edith Hale	Boston. 110 Bay State Road.
1901	Swift, Henry Marshall	Portland, Me. 30 Deering St.
1910	Swift, John Baker	Boston. 419 Beacon St.
1907	Swift, Walter Babcock	Boston. 110 Bay State Road.
1905	Sylvester, Albie Warren	Pittsfield. 150 North St.
1901	Sylvester, Charles Porter	Hull. Office, Boston. 460 Audubon Road.
1914	Sylvester, Nathan Rowland, Jr.	West Somerville (Somerville). 1121 Broadway.
1907	Sylvester, Philip Haskell	Newton Center (Newton). 866 Beacon St.
1893	Sylvester, William Hillman	Natick. 6 Clarendon St.
1900	Symonds, Alice Gertrude	Haverhill. 175 Main St.
1893	Synan, William Edward	Fall River. 620 William St.

T

1902 1915	Tabor, Edward Orlando	Lowell. 18 Shattuck St.
1897	Taft, Albert Atherton	Keene, N. H. 56 Court St.
1906	Talbot, Fritz Bradley	Boston. 311 Beacon St.
1915	Talbot, John Edward	Worcester. 28 Pleasant St.
1883	Tallman, Augustus Littlefield	East Boston (Boston). 9 Princeton St.
1916	Tate, Harry John	Pittsfield. House of Mercy Hosp.
1915	Taveira, Arthur Joaquim	New Bedford. 1565 Acushnet Av.
1894	Taylor, Edward Wyllys	Boston. 457 Marlboro' St.
1903	Taylor, Erwin Hartwell	Pittsfield. 316 North St.
1882	Taylor, Frederic Weston	Cambridge. 1735 Mass. Av.
1901	Taylor, Frederick Leon	Roxbury (Boston). 45 Center St.
1893	Taylor, George Lyman	Holyoke. 247 Maple St.
1900	Taylor, James, Jr.	Worcester. 49 Pearl St.
1900 1916	Taylor, John Danforth	East Boston (Boston). 31 Princeton St.
1909	Taylor, Roy Arnold	Waltham. 266 Moody St.
1908	Taylor, Walter	Florence (Northampton). 70 Maple St.
1909	Tedford, Ada Helena	Woburn. 51 Pleasant St.
1880	Temple, William Franklin	Boston. 377 Beacon St.
1913	Temple, William Franklin, Jr.	Boston. 377 Beacon St.
1914	Ten Broeck, Carl	Princeton, N. J. Rockefeller Institute.
1893	Ten Broeck, Stanton Jacob	Orange. 15 Grove St.
1891	Tenney, Benjamin	Boston. 308 Marlboro' St.
1886	Tenney, John Arthur	Boston. 151 Huntington Av.
1894	Tenney, William Northend	Canton. 756 Washington St.
1913	Tennis, Matthew Nicholas	Fall River. Union Hosp.
1892	Thayer, Eugene	Roxbury (Boston). Office, Boston. 419 Boylston St.
1901	Thayer, Hartley Wales	Newtonville (Newton). 355 Walnut St.
1914	Thom, Douglas Armour	Worcester. Grafton State Hospital.
1911	Thomas, Charles Holt	Cambridge. 1718 Mass Av.
1912	Thomas, Elmer Ellsworth	Northampton. 160 Main St.
1889	Thomas, John Jenks	Boston. 88 Bay State Rd.
1911	Thomas, William Kilpack Smith	Cambridge. 1718 Mass. Av.
1897	Thomes, John Blanchard	Pittsfield. 86 North St.
1914	Thompson, Charles Arthur	Newton Highlands (Newton). 1099 Walnut St.
1903	Thompson, Charles Edward	East Gardner (Gardner). State Colony.
1891	Thompson, Charles Oscar	Boston. 589 Beacon St.
1870	Thompson, Frederick Henry	Fitchburg. 3 Pleasant St.
1904	Thompson, Frederick Henry, Jr.	Fitchburg. 168 Prichard St.
1906	Thompson, George Hocken	North Adams. 18 Ashland St.
1917	Thompson, Herbert Ellery	Worcester. State Hosp.
1915	Thompson, John Stephen	Cambridge. 1525 Cambridge St.
1898	Thompson, Peter Hunter	Boston. 308 Commonwealth Av.
1899	Thompson, Richard Henry	Malden. 82 Summer St.
1916	Thompson, William James	Hathorne (Danvers). State Hospital.
1899	Thorn, Edwin Cyrus	Deerfield.
1887	Thorndike, Augustus	Boston. 601 Beacon St.
1887	Thorndike, Paul	Boston. 24 Marlboro' St.
1903	Thorndike, Townsend William	Boston. 20 Newbury St.
1893	Thornton, James Brown	Boston. 168 Huntington Av.
1907	Thurber, Madison Templeton	Dorchester (Boston). 91 Savin Hill Av.
1915	Tiani, Bernardo	Lawrence. 88 A. Lawrence St.
1915	Tibbetts, Guy Daniel	Bennington, N. H.
1890	Tibbetts, James Thomas	Mineola, N. Y.
1890 1904	Tigh, Frederick	Newburyport. 140 High St.
1908	Tighe, Michael Aloysius	Lowell. 9 Central St.
1899	Tilden, Irving Niles	Mattapoisett. Barstow St.
1913	Tilton, Earle Edward	Newton. Office, Boston. 483 Beacon St.
1892	Tilton, Frank Herbert	East Boston (Boston). 15 Princeton St.
1882	Tilton, Josiah Odin	Lexington.
1911	Timmins, Edward Francis	South Boston (Boston). 527 Broadway.
1901	Tingley, Louisa Paine	Boston. 9 Mass. Av.
1906	Tinkham, Oliver Goldsmith	Brighton (Boston). Office, Boston. 527 Beacon St.
1893	Tirrell, Vinson Meader	South Weymouth (Weymouth).
1881	Titcomb, George Eugene	Concord. 7 Sudbury St.
1912	Titus, Raymond Stanton	Boston. 355 Marlboro' St.
1880	Tobey, George Loring	Clinton. 205 Church St.
1907	Tobey, George Loring, Jr.	Boston. 416 Marlboro' St.
1916	Tobey, Harold Grant	Boston. 416 Marlboro' St.
1886	Tolman, Julia	Arlington. 695 Mass. Av.
1913	Tomkies, James Scott	Dallas, Texas. St. Paul Sanatorium.
1906	Toohey, Thomas Victor	Brookline. Office, Roxbury (Boston). 129 St. Alphonsus St.
1911	Toppan, Roland Lesley	Newburyport. 148 High St.
1904	Torbert, James Rockwell	Boston. 252 Marlboro' St.
1914	Torney, George Henry	Brookline. Bournewood Hospital.

1913 Torrey, Arthur Stanley....Gloucester. 164 East Main St.
1872 Torrey, Samuel William †1909 Beverly. 108 Cabot St.
1905 Tower, Freeman Augustus. Derry, N. H.
1914 Towle, Clarence Clarke....Somerville. 24 Prospect Hill Av.
1908 Towle, Edwin Dudley......Salem. 2 Mason St.
1917 Towle, Fred Scates........Portsmouth, N. H. 350 State St.
1891 Towle, Harvey Parker.....Boston. 453 Marlboro' St.
1877 Towle, Henry Charles......Dorchester (Boston). 1428 Dorchester Av.
1915 Towne, Edward Bancroft..Roxbury (Boston). P. B. Brigham Hospital.
1885 Townsend, Charles Wendell Boston. 76 Marlboro' St.
1901 Townsend, David..........River Glade, N. B.
1901 Tozier, Charles Herman...Winchester. Office, Boston. 100 Boylston St.
1891 Tracy, Edward Aloysius....South Boston (Boston). 489 Broadway.
1905 Tracy, John Matthew......Springfield. 166 Chestnut St.
1910 Tracy, William Leighton...Pittsfield. 8 Bank Row.
1901 Trainor, John Brett.......Fall River. 1515 South Main St.
1906 Trainor, Joseph Aloysius...Cambridge. 103 Belmont St.
1917 Trask, Henry Wallis......West Boylston.
1906 Trask, John Wilson........Lynn. 171 Lewis St.
1906 Trayes, William Henry, Jr..Boston. 511 Mass. Av.
1894 Treanor, John Peter.......Dorchester (Boston). 3 Howes St.
1912 Tripp, Edwin Prescott.....Falmouth. Locust St.
1897 Tripp, George Alston......Worcester 477 Cambridge St.
1885 Trowbridge, Edward Henry Worcester. 28 Pleasant St.
1893 Trueman, Harmon Silas...Somerville. 145 Sumner St.
1915 Trueman, Nelson Gore.....Hathorne (Danvers). State Hospital.
1903 Truesdale, Philemon Edwards Fall River. 151 Rock St.
1915 Trull, Alfred Chase........Haverhill. 48 White St.
1868 Trull, Washington Benson †1912 Boston. 18 West Cedar St.
1909 Tryon, Geneva.............Cambridge. 7 Oxford St.
1906 Tucker, Arthur Wallace....Lynn. 285 Western Av.
1908 Tucker, George Everett....Salem. 86 Federal St.
1894 Tucker, Samuel Chase.....Peabody. 16 Chestnut St.
1911 Tuholski, David Benjamin..Brockton. 105 Main St.
1891 Tully, Edward Joseph......Fitchburg. 98 Prichard St.
1875 Tupper, Augustus Maclauchlan Rockport. Main St.
1914 Turetsky, William Leo.....Dorchester (Boston). 1071 Blue Hill Av.
1912 Turnbull, John Archibald Allston (Boston). 84 Harvard Av.
1907 Turner, Charles Sampson..Providence, R. I. 532 Prairie Av.
1910 Turner, William Kenneth..New Bedford. 1105 Acushnet Av.
1887 Tuttle, Albert Henry......Cambridge. Office, Boston. 1083 Boylston St.
1879 Tuttle, George Thomas....Waverley (Belmont). McLean Hospital.
1885 Twitchell, Edward Thayer. Dorchester (Boston). 25 Alban St.
1882 Twitchell, George Pierce...Greenfield. 17½ Federal St.
1886 Twombly, Edward Lambert Boston. 416 Marlboro' St.
1905 Tyler, Winsor Marrett.....Lexington. 454 Mass. Av.
1910 Tynan, Joseph Patrick.....South Boston (Boston). 529 Broadway.
1904 Tyrode, Maurice Paul Octave Véjux Boston. 416 Marlboro' St.
1906 Tyzzer, Ernest Edward....Wakefield. Office, Roxbury (Boston). 240 Longwood Av.

U

1912 Underhill, Elizabeth Colden South Hadley. Mt. Holyoke College.
1915 Underhill, Samuel Graham. Lynn. 212 Boston St.
1858 Underwood, George Latham †1898 Belmont. 50 Common St.
1914 Uniac, Thomas Vincent....Lawrence. 133 Haverhill St.
1897 Upton, Charles Louis......Shelburne Falls (Shelburne). Main St.
1904 Urquhart, John Edwin.....Ashfield.

V

1893 Valentine, Henry Charles..Lexington.
1892 Van Allen, Harvey Ward..Springfield. 19 Maple St.
1916 Van de Velde, Honoré.....Boston. 72 Huntington Av.
1917 Van Deursen, George Livesay Lowell. 20 Palmer St.
1916 Van Gaasbeek, George Henry Springfield. 29 Berkeley St.
1908 Van Nüys, Fresenius......Weston. Central Av.
1914 Varney, Elton Murray.....Peabody. 72 Main St.
1895 Varney, Fred Elbridge.....North Chelmsford (Chelmsford).
1897 Vaughan, Jonas Hobart....Tampa, Fla. 214 South Brevard Av.
1912 Verde, Luigi..............Cambridge. Office, Boston. 372 Hanover St.
1902 Verhoeff, Frederick Herman Boston. 101 Newbury St.
1882 Vickery, Herman Frank....Brookline. 26 Chestnut St.
1892 Vickery, Lucia Florence...Jamaica Plain (Boston). 27 Lakeville Place.
1897 Vietor, Agnes Caecilia.....Boston. 175 Dartmouth St.
1878 Viles, Clarence Albertus...Lowell. 855 Bridge St.
1904 Vincent, Beth.............Boston. 295 Beacon St.
1917 Vivian, William James....East Walpole (Walpole). 202 Washington St.
1916 Voorhis, Kathalyn.........Worcester. 28 Pleasant St.
1897 Vose, Robert Henry........Boston. 443 Beacon St.

W

1916 Wadden, Joseph Matthew..Cambridge, 325 Huron Av.
1902 Wadsworth, Richard Goodwin Boston. 522 Commonwealth Av.
1914 Wagner, Emma Juliet......West Somerville (Somerville). 370 Highland Av.
1914 Wainshel, Percy William...Lynn. 125 Summer St.
1908 Waite, Lucy Reed.........Southbridge.
1886 Wakefield, Albert Tolman..Sheffield.
1906 Walch, Joseph Francis.....Lawrence. 68 East Haverhill St.
1904 Walcott, Henry Joel.......Concord. 92 Main St.
1863 Walcott, Henry Pickering..Cambridge. 11 Waterhouse St.
1906 Walcott, William Wright..Natick. 32 W. Central St.
1866 Walker, Augustus Chapman †1901 Cambridge. 165 Upland Rd.
1913 Walker, Clifford Black....Jamaica Plain (Boston). 706 South Huntington Av.
1902 Walker, David Harold.....Boston. 390 Commonwealth Av.
1908 Walker, Harry Abram.....Somerville. 464 Broadway.
1910 Walker, Irving James......Allston (Boston). Office, Boston. 527 Beacon St.
1914 Walker, Isaac Chandler....Brookline. 9 Auburn Courts.
1915 Walker, Melvin Harvey, Jr. Pittsfield. 34 Fenn St.
1894 Walker, William...........Revere. 780 Winthrop Av.
1905 Walker, William Dacre....Andover. 121 Main St.
1876 Wallace, Alonzo Stewart...Nashua, N.H. 198 Main St.
1905 Wallace, Anna Marie......Waverley (Belmont). Lock Box C.
1898 Wallace, George Loney.....Wrentham.
1917 Wallace, John ....Roxbury (Boston). 219 Warren St.
1899 Walsh, Charles Joseph.....Arlington. 223 Mass. Av.
1913 Walsh, Edmund Francis...Boston. 121 Pinckney St.

1904	Walsh, John Edward	Revere. 238 Beach St.
1880	Walton, George Lincoln	Boston. 199 Marlboro' St.
1897	Walton, William Joseph	Dorchester (Boston). Office, Boston. 536 Commonwealth Av.
1886	Ward, George Otis	Worcester. 875 Main St.
1904	Ward, Roy Joslyn	Worcester. 9 Bellevue St.
1913	Ward, William Greenleaf	Lynn. 150 Essex St.
1907	Wardle, Henry	Fall River. 863 Plymouth Av.
1907	Wardwell, James Knight	Boston. 1111 Boylston St.
1908	Warner, Carmillus Turten	Marlborough. 75 West Main St.
1917	Warren, Charles Fletcher	Amesbury. 1 School St.
1905	Warren, Edward Dane	Holyoke. 283 Maple St.
1905	Warren, Franklin Lafayette	Bridgewater. Central Sq.
1908	Warren, Hobart Endicott	Beverly Farms (Beverly).
1909	Warren, John	Boston. 58 Beacon St.
1866	Warren, John Collins	Boston. 58 Beacon St.
1907	Warren, Lizzie Maude	Waverley (Belmont). Box 344.
1909	Warren, Thomas Francis	Fall River. 591 Middle St.
1892	Washburn, Elliott	Kansas City, Mo. K. C. Gen. Hosp.
1899	Washburn, Frank Hall	Holden.
1897	Washburn, Frederic Augustus	Boston. Mass. Gen. Hospital.
1886	Washburn, George Hamlin	Boston. 238 Commonwealth Av.
1901	Waterman, George Arthur	Boston. 410 Beacon St.
1916	Waters, James Edward	Gardner. 21 Parker St.
1895	Watkins, Royal Phillips	Worcester. 17 West St.
1878	Watson, Francis Sedgwick	Boston. 92 Marlboro' St.
1899	Watson, Frank Gilman	Dorchester (Boston). 11 Virginia St.
1917	Watt, George	Worcester. City Hosp.
1911	Watters, Henry	Newton Center (Newton). 47 Grafton St.
1907	Watters, William Henry	West Roxbury (Boston). Office, Boston. 496 Commonwealth Av.
1915	Watts, Harry Adelbert	Malden. 606 Main St.
1894	Watts, Henry Fowler Ransford	Dorchester (Boston). 6 Monadnock St.
1908	Webb, Harold Randall	Arlington. 409 Mass. Av.
1880	Webber, Frederick Ward	Newton. 465 Center St.
1865	Webber, Samuel Gilbert †1911	Brookline. 60 Gorham Av.
1915	Webber, Wolfert Gerson	Allston (Boston). 1161 Commonwealth Av.
1888	Webster, George Arthur	Boston. 419 Boylston St.
1890	Weeks, Joshua Franklyn	New Bedford. County Rd.
1894	Weiser, Walter Rupert	Springfield. 97 Chestnut St.
1894	Welch, Edward John	Lowell. 10 East Merrimack St.
1913	Weller, John Henry	State Farm (Bridgewater).
1912	Wells, Charles Edward	Cambridge. Office, Boston. Mass. Gen. Hosp.
1907	Wells, David Washburn	West Newton (Newton). Office, Boston. Hotel Westminster, Copley Sq.
1878	Wells, Frank	Boston. 120 Franklin St.
1906	Wells, Orion Vassar	Westford.
1891	Wentworth, Arthur Howard	Boston. 352 Marlboro' St.
1909	Wentworth, Mark Hunking	Concord, 26 Lexington Rd.
1874	Wescott, William Henry †1913	Roxbury (Boston). 66 Clifton St.
1880	West, Edward Graeff	Roxbury (Boston). 630 Warren St.
1910	West, Frederick Orra	Woburn. 57 Pleasant St.
1894	West, George Leon	Newton Center (Newton). 860 Beacon St.
1894	Weston, George Dake	Springfield. 70 Main St.
1882	Wetherbee, Roswell	Cambridge. 798 Mass. Av.
1898	Wetherell, Arthur Bryant	Holyoke. 180 Chestnut St.
1915	Wheatley, Frank Edward	North Abington (Abington). 174 Adams St.
1884	Wheatley, Frank George	North Abington (Abington). 174 Adams St.
1893	Wheeler, Alfred Augustus	Leominster. 48 Mt. Pleasant Av.
1894	Wheeler, Charles Douglas	Worcester. 18 Chestnut St.
1908	Wheeler, Charles Holmes	Haydenville (Williamsburg).
1897	Wheeler, Emma Hammond	New Bedford. 57 Morgan St.
1870	Wheeler, Leonard	Worcester. 12 Chestnut St.
1900	Wheeler, Lucia Anna	Wernersville, Pa. State Asylum.
1915	Wheet, Harry Ray	Boston. 514 Commonwealth Av.
1906	Whelan, Charles	Hingham. Central St.
1910	Whelan, Edmond Vincent	Bridgewater. 35 School St.
1894	Whipple, Farrington Hasham	Boston. 1079 Boylston St.
1885	Whitaker, Clarence Wilder	Worcester. 44 Pleasant St.
1905	Whitcher, Burr Royce	West Somerville (Somerville). 1040 Broadway.
1916	Whitcomb, Clarence Adelbert	Springfield. Springfield Hospital.
1884	Whitcombe, Charles Reed	Roslindale (Boston). 23 South Fairview St.
1910	White, Arthur Joseph	Mattapan (Boston). 249 River St.
1894	White, Belle Platt	Springfield. 182 Sumner Av.
1893	White, Charles James	Boston. 259 Marlboro' St.
1902	White, Clifford Allen	Granville. P. O. Box 150.
1914	White, Everett	Lynn. 17 Marianna St.
1896	White, Franklin Warren	Boston. 322 Marlboro' St.
1914	White, George Arthur	Cambridge. 170 Harvard St.
1912	White, Henry Alverado	Taunton. 17 West Britannia St.
1882	White, Herbert Warren	Roxbury (Boston). 151 Humboldt Av.
1910	White, John Robert	Washington, D. C. Navy Med. School.
1893	White, Leon Edward	Wellesley. Office, Boston. 390 Commonwealth Av.
1872	White, Levi	Worcester. 7 Gates St.
1909	White, Lucy Nye	Winthrop. 818 Winthrop Av.
1899	White, Michael William	Somerville. 21 Walnut St.
1911	White, Paul Dudley	Dorchester. Office, Boston. Mass. Gen. Hosp.
1892	White, William Allen	Roxbury (Boston). 249 Warren St.
1894	Whitehill, George Edward	Everett. 516 Broadway.
1897	Whiteside, George Shattuck	Portland. Ore. 710 Dekum Bldg.
1892	Whiting, George Washington Whitney	Somerville. 282 Broadway.
1906 1916	Whitman, Luther Oakes	Amherst. 21 Pleasant St.
1886	Whitney, Charles Melville	Boston. 386 Commonwealth Av.
1882	Whitney, Edward Melville	New Bedford. 27 South 6th St.
1905	Whitney, Edward William	Indian Orchard (Springfield). 162½ Main St.
1910	Whitney, George Burgess	Haverhill. 252 Washington St.
1901	Whitney, Harriet Wiley	Indian Orchard (Springfield). 162½ Main St.
1905	Whitney, Ray Lester	Waverley (Belmont). McLean Hospital.
1874	Whitney, William Fiske	Boston. 228 Marlboro' St.
1904	Whiton, Ross Kittredge	Bedford.
1910	Whittemore, William Stewart	Cambridge. 39 Brattle St.
1906	Whittemore, Wyman	Boston. 330 Dartmouth St.
1891	Whitten, George Edwin	Haverhill. 154 Main St.
1887	Whittier, Francis Fremont	Brookline. 94 Harvard St.
1900	Whoriskey, John Joseph	Cambridge. 1712 Mass. Av.
1914	Wickham, Thomas William	Boston. 514 Commonwealth Av.

1891	Wilbur, Hubert Granville	Fall River. 292 North Main St.
1887	Wilbur, Sarah Mann	Springfield. 319 State St.
1910	Wilcox, De Witt Gilbert	Boston. 496 Commonwealth Av.
1907	Wilcox, Henry Hopson	Springfield. 151 North Main St.
1906	Wilder, Winford Oliver	Pittsfield. 34 Fenn St.
1906	Wilinsky, Charles Francis	Boston. 80 Green St.
1914	Wilkins, George Arthur	Revere. 646 Beach St.
1900	Wilkins, George Clarence	Manchester, N. H. 402 The Beacon.
1909	Wilkins, Samuel Henry	West Medford (Medford). 411 High St.
1917	Willey, Walter Brown, Jr.	Brighton (Boston). St. Eliz. Hosp.
1898	Williams, Abram Case	Springfield. 137½ State St.
1894	Williams, Augusta Gilbert	Brookline. 278 Walnut St.
1887	Williams, Charles Crosby	Los Angeles, Calif. 401 South Hope St.
1874 1895	Williams, Charles Herbert	Milton. Office, Boston. 1069 Boylston St.
1915	Williams, David Lawrence	Boston. 168 Huntington Av.
1902	Williams, Edward Denison	Easthampton. 153 Union St.
1894	Williams, Edward Russell	Cambridge. Office, Boston. 1069 Boylston St.
1872	Williams, Edward Tufts †1910	Roxbury (Boston). 125 Dudley St.
1877	Williams, Francis Henry	Boston. 505 Beacon St.
1915	Williams, Frankwood Earl	Cambridge. 44 Langdon St.
1894	Williams, Frank Percival	Brookline. Office, Boston. 419 Boylston St.
1916	Williams, Frederick Horace	Brookline. Office, Boston. 236 Clarendon St.
1917	Williams, Frederick Russell	Worcester. 11 Elm St.
1880	Williams, Harold	Boston. 528 Beacon St.
1887	Williams, Henry Clarence	Boston. 140 Boylston St.
1899	Williams, Hugh	Boston. 301 Beacon St.
1906	Williams, John Thomas	Boston. 483 Beacon St.
1882	Williams, Joseph	Dorchester (Boston). 12 Bloomfield St.
1917	Williamson, Cordelia Isabella	Watertown. 57 Poquossette St.
1898	Willis, Charles Austin	Waltham. 562 Main St.
1914	Willoughby, Earle Carlisle	North Reading. State Sanatorium.
1894	Wilson, Charles Oscar	Lowell. 614 Gorham St.
1913	Wilson, Charles Moore	Salem. 54 Washington St.
1910	Wilson, Edmund Winfred	Boston. City Hospital.
1904	Winchester, George Wesley	Mattapan (Boston). 1411 Blue Hill Av.
1888	Winn, Charles Henry	Roxbury. 1474 Tremont St.
1908	Winslow, Benjamin Sabert	New Bedford. 1065 South Water St.
1893	Winslow, Edward Smith	Easthampton. 103 Main St.
1903	Winslow, Frederick	Boston. 275 Clarendon St.
1897	Withee, Frederick Elmarien	Newton Highlands (Newton). 9 Forest St.
1892	Withington, Alfreda Bosworth	Pittsfield. 17 Clinton Av.
1917	Withington, Paul Richmond	Boston. City Hospital.
1904	Wolbach, Simeon Burt	Boston. 420 Beacon St.
1907	Wood, Benjamin Ezra	Allston (Boston). Office, Boston. 520 Beacon St.
1882 1888	Wood, Henry Austin	Waltham. 751 Main St.
1885	Wood, Leonard	U. S. Army.
1901	Wood, Nathaniel Knight	Boston. 520 Beacon St.
1911	Wood, Nelson Merwin	Charlestown (Boston). Office, Boston. 19 Bay State Road.
1889	Wood, Norman Perkins	Northfield. Main St.
1899	Woodbury, Frank Taylor	Wakefield. 21 Chestnut St
1899	Woodbury, Herbert Elwell	Indianapolis, Ind. 571 E. Drive Woodruff Pl
1891	Woodbury, William Richardson	Rochester, N. Y. 241 East Av.
1907	Woodill, Edith Esty	Waverley (Belmont). Lock Box C.
1902	Woodruff, Richard Allen	Pittsfield. 73 North St.
1899	Woods, Charles Edwin	Lunenburg. Lancaster Av.
1879 1897	Woods, George Lyman †1915	Springfield. 60 Sherman St.
1893	Woodward, Johnson Rufus	Oxford.
1882	Woodward, Lemuel Fox	Worcester. 52 Pearl St.
1877	Woodward, Samuel Bayard	Worcester. 58 Pearl St.
1879	Woodworth, Dwight Sidney	Fitchburg. 882 Main St.
1902	Woodworth, John Dawson Roswell	Jamaica Plain (Boston). 9 Greenough Av.
1883	Worcester, Alfred	Waltham. 751 Main St.
1873	Workman, William Hunter †1912	Worcester.
1901	Wormelle, Charles Burton	Allston (Boston). 186 Brighton Av
1902	Worth, Edward Philip	Edgartown.
1904	Worthen, Charles Arthur	Lynn. 32 Mall St.
1896	Worthington, Arthur Morton	Dedham. 26 Court St.
1897	Wright, George Hermann	New Milford, Conn. 24 Monument Sq.
1894	Wright, James Homer	Boston. Mass. Gen. Hospital.
1916	Wright, Willard Lyman	Boston. 510 Commonwealth Av
1910	Wright, William Francis	Fall River. 160 Robeson St.
1895	Wylie, Eugene Cushman	Dorchester (Boston). 556 Washington St.
1894	Wylie-Cushman, Ella Rosalind	Boston. 711 Boylston St.
1912	Wyman, Edwin Theodore	Boston. 483 Beacon St.

Y

1903	Yeaton, George William	Medway. Village St.
1897	Yenetchi, Henry Ainsworth	Somerville. 104 Highland Av.
1895	Yoosuf, Abraham Kevork	Worcester. 82 Franklin St.
1915	Young, Annie Roberts	Waltham. 925 Main St.
1895	Young, Edgar William	Everett. 640 Broadway.
1910	Young, Edward Lorraine, Jr.	Boston. 99 Commonwealth Av.
1914	Young, Edward Wallace	New Bedford. 403 Union St
1897	Young, Ernest Boyen	Boston. 434 Marlboro' St.
1906	Young, Evangeline Wilson	Boston. 510 Commonwealth Av.
1907	Young, James Herbert	Newton. 19 Baldwin St.
1882	Young, John Francis	Brookline. 1821 Beacon St.
1905	Young, Ralph Randal	Roxbury (Boston). 3 Highland St.
1905	Young, Roy Demas	Arlington. 788 Mass. Av.
1908	Young, Walter Harding	Dedham. Office, Boston. 39 Newbury St.
1899	Young-Slaughter, Emma Elizabeth	Lowell. 100 Westford St.

Z

1888	Zabriskie, Frank Hunter	Greenfield. 426 Main St.
1916	Zarrella, Angelo Mario	Lynn. 212 Boston St.
1913	Zimmerman, Henry	Springfield. 721 North St.

Massachusetts Medical Society

LOCAL DIRECTORY

THE FELLOWS LISTED ACCORDING TO THEIR SITUATION
IN THE VARIOUS CITIES, TOWNS AND POST
OFFICES OF THE STATE

JANUARY 1, 1918

LOCAL DIRECTORY

THE FELLOWS LISTED ACCORDING TO THEIR SITUATION IN THE VARIOUS CITIES, TOWNS AND POST OFFICES OF THE COMMONWEALTH.

NOTE.—Names of District Societies are printed in lower-case Roman. Names of cities are printed in capital Names of towns are printed in small capitals. Names of villages and post offices are printed in lower case italic

Abington (Plymouth).
(See also: North Abington.)
Hutchinson, W. P.
Stevens, W. R.

Acton (Middlesex North).
(See also: West Acton).

Acushnet (Bristol North).

Adams (Berkshire).
Boom, A. K.
Crowley, J. F.
Holmes, H. B.
Pascoe, W. W.

Agawam (Hampden).
(See also: Feeding Hills.)

Alford (Berkshire).

Allerton (Hull).
Sturgis, W. H. W.

Allston (Brighton) (BOSTON).
Casey, J. F.
Dow, E. S.
Ely, T. W.
Giddings, H. G.
Haslam, F. A.
Lovell, M. E.
†Moran, J. B.
McKeen, S. F.
Papas, P. N.
Riley, C. A.
Webber, W. G.
Wood, B. E.
Wormelle, C. B.

Amesbury (Essex North).
Biron, J. F. R.
Leslie, H. G.
Mudge, O. P.
Mullen, P. J.
Murphy, D. D.
Rand, J. W.
Savignac, A. N.
Warren, C. F.

Amherst (Hampshire).
(See also: Cushman, and North Amherst.)
Haskell, N. C.
Rawson, G W.
Rockwell, H. G.
Whitman, L. A.

Annisquam (GLOUCESTER).
Shields, E. E.

Andover (Essex North).
Abbott, C. E.
Conroy, E. C.
Daly, J. J.
Fuller, J. R.

Andover (continued).
Lane, E. D.
Look, P. J.
Walker, W. D.

Arlington (Middlesex South).
(See also: Arlington Heights.)
Atwood, C. F.
Buckley, D. J.
Dennett, C. A.
Keegan, C. A.
Lawley, B. I.
Pratt, Ezekiel.
Sanger, G. E.
Stickney, E. P.
Tolman, Julia
Walsh, C. J.
Webb, H. R.
Young, R. D.

Arlington Heights (Arlington).
Farrington, L. M.
Ring, A. H.

Ashburnham (Worcester North).
Bates, C. A.
Fosgate, E. G.

Ashby (Worcester North).
Pope, F. F.

Ashfield (Franklin).
Urquhart, J. E.

Ashland (Middlesex South).
Morse, R. S.

Athol (Worcester North).
Bassow, G. J.
Cuddy, J. F.
Dodge, G. F.
Perry, G. L.

Atlantic (QUINCY).
Bartlett, F. A.
Bruce, D. A.
Drew, M. E.
Sweeney, M. T.

ATTLEBOROUGH (Bristol North).
Battershall, Jesse W.
Battershall, Joseph W.
Battershall, M. H. W.
Bolduc, A. G.
Clarke, J. W.
Conro, A. C.
Hewitt, W. O.
Holden, C. S.
Kent, R. P.
Mackie, L. V. G.
Milot, W. F.
Murphy, F. V.
Reese, J. A.
Rounseville, W. E.

Auburn (Worcester).

Auburndale (NEWTON).
Godfrey, H. W.
Haskell, H. H.
Hutchinson, C. P.
Keever, H. F.
†Porter, F. E.

Avon (Plymouth).
Linfield, E. P.

Ayer (Worcester North).
Bulkeley, F. S.
Hopkins, B. H.
Priest, H. B.

Baldwinsville (Templeton).
Page, H. W.
Robie, W. F.
Stick, H. L.

Barnstable (Barnstable).
(See also: Cotuit, Hyannis, Ma ton's Mills, Osterville.)
Millikin, C. W.

Barre (Worcester).
Bates, W. S.
Brown, G. A.

Becket (Berkshire).
Dearborn, H. H.

Bedford (Middlesex North).
Hamblen, E. E.
Whiton, R. K.

Belchertown (Hampshire).
Eliot, H. W.

Bellingham (Norfolk).

Belmont (Middlesex South).
(See also: Waverley.)
†Dow, J. A.
Hanson, W. C.
Hoitt, E. G.
Leavitt, F. C.
Rogers, M. H.
†Underwood, G. L.

Berlin (Worcester).

Bernardston (Franklin).
Croft, B. P
Pierce, W. H.

BEVERLY (Essex South).
Cowles, F. A
Dexter, Franklin
Emery, W. E.
Hayes, W. F.
Hill, G. J.
Johnson, P. P.
Kline, G. M.
Lawlor, J. F.

EVERLY (continued).
Odeneal, T. H.
Phillips, C. H.
Sears, H. E.
Shatswell, J. A.
Stanley, F. G.
Stickney, G. A.
Stone, R. E.
Swan, L. C.
†Swasey, O. F.
†Torrey, S. W.

everly Farms (BEVERLY).
Murphy, D. F.
Warren, H. E.

ILLERICA (Middlesex North).
(See also: North Billerica.)
Alley, E. J.
Buck, M. A.
Stearns, A. W.

lackinton (WILLIAMSTOWN).
Galvin, William

LACKSTONE (Worcester).
Roche, T. F.

LANFORD (Hampden).

OLTON (Worcester).

OSTON (Suffolk).
(See also: East Boston, South Boston, Allston, Brighton, Charlestown, Dorchester, Forest Hills, Hyde Park, Jamaica Plain, Mattapan, Roslindale, Roxbury, West Roxbury.)
Achorn, R. C.
Adams, L. D.
Allen, A. W.
Allen, Freeman
Allen, G. W.
Alcuzar, Izak
Amadon, A. F.
Ames, J. L.
Andrews, H. V.
Appleton, William
Arkin, Louis
Arnold, H. D.
Austin, A. E.
Ayer, J. B.
Ayer, S. H.
Azadian, D. G.
Badger, G. S. C.
Bailey, W. C.
Baker, D. V.
Baker, H. W.
Balboni, G. M.
Balch, F. G.
Bardwell, F. A.
Barney, J. D.
Barney, W. O.
Barnum, F. G.
Barone, Joseph
Barrell, C. S.
Barron, M. E.
Barstow, A. T.
Bartol, J. W.
Bean, C. P.
Bearse, Carl
Beebe, T. C.
Berry, C. F.
Bigelow, W. S.
Binney, Horace
Bisbee, E. S.
Blake, C. J.
Blake, Gerald

BOSTON (continued).
Blake, J. B.
Blake, J. G.
†Blodgett, A. N.
Blodgett, J. H.
†Boardman, W. E.
Boardman, W. P.
Boardman, W. S.
Bonelli, R. P.
Bossidy, J. C.
Bottomley, J. C.
Bowditch, Harold
Bowditch, V. Y.
Bowen, J. T.
Bowman, F. R.
Brackett, E. G.
Bradford, E. H.
Brady, J. F.
Brant, Austin
Bremer, J. L.
Breslin, J. G.
Brewster, G. W. W.
Briggs, F. M.
Briggs, J. E.
Briggs, L. V.
Brigham, F. G.
Brindisi, Rocco
Bristol, DeL. J.
Brooks, E. M.
Brough, D. D.
Brown, L. T.
Brown, Percy
Brown, W. J.
Browne, W. E.
Bruce, J. B.
Bryant, A. G.
Bryant, John
†Bush, J. S. F.
Buck, C. E.
Bullard, W. N.
Burnham, E. A.
Burnett, F. L.
Burns, F. S.
Burrage, W. L.
Butler, A. E.
Butler, C. S.
Butler, P. F.
Cabot, Hugh
Cabot, R. C.
Caines, R. J. R.
Castleman, Philip
Chadbourne, A. P.
Chamberlain, M. L.
Chandler, T. E.
Chase, H. M.
Chase, W. G.
Cheever, David
Chenery, W. E.
Christian, H. A.
Chute, A. L.
Clap, E. W.
Clark, G. O.
Clark, J. P.
Clark-MacLeod, Emily
Cliff, L. A.
Clymer, George
Cobb, Farrar
Cobb, F. C.
Cobb, G. N.
Cochrane, R. C.
Codman, E. A.
Coffin, R. A.
Cogan, J. A.
Colburn, H. H.
Conant, W. M.
Coriat, I. H.
Cotton, F. J.
Coues, W. P.
Councilman, W. T.
Coursey, F. R.

BOSTON (continued).
Courtney, J. W.
Cowles, W. L.
Cox, A. C.
Cox, O. F.
Cragin, G. A.
Crandon, L. R. G
Crane, Clarence
Crawford, F. X.
Crockett, E. A.
Crosbie, A. H.
Culbertson, E. V. P. B.
Cummin, J. W.
Cummins, L. J.
Cunningham, A. R.
Cunningham, J. H., Jr.
Cushing, H. W.
Cutler, E. G.
Cutler, G. D.
Dadmun, E. J.
Daly, W. J.
Daniels, E. A.
Davenport, F. H.
Davis, F. A.
Davis, Lincoln
Davis, M. F.
Dawson, R. P.
Day, H. F.
DeBlois, T. A.
Delano, Samuel
Denig, B. A.
Denny, G. P.
DeNormandie, R. L.
Derby, F. W.
Derby, G. S.
Dewing, L. A.
Di Mento, V. J.
Dixon, L. S.
Dixon, R. B.
Dodge, A. M.
Dodge, W. W.
Donoghue, F. D.
Dorcey, J. E.
Dowling, J. J.
Drury, D. W.
Duckering, F. W.
Dunn, C. H.
Dunn, Wm. Aloysius
Dunn, Wm. Ambrose
Dwight, E. W.
Dwyer, W. J.
Eames, G. F.
Earle, G. H.
Easton, E. T.
Eaton, H. B.
Edwards, W. L.
Ehrenfried, Albert
Ehrlich, Henry
Elliot, J. W.
Elliott, R. D.
Emerson, P. W.
Emerson, W. R. P.
English, M. J.
Erb, T. C.
Eustis, R. S.
Evans, Albert
Everett, E. E.
Fabyan, Marshal
Fair, R. P.
Farlow, J. W.
Faulkner, W. E.
Felch, C. I.
Felch, G. A.
Felch, L. P.
Finkelstein, Harry
Fischbein, Louis
Fitz, G. W.
Fitz, Reginald
Fitzgerald, J. B.
Flagg, Elisha

BOSTON (continued).
Floyd, Cleaveland
Foley, T. B.
Frankel, D. I.
Fraser, A. McK.
Fraser, Somers
Friedman, Benjamin
Friedman, Eli
Friedman, Nathan
Frothingham, Channing, Jr.
Frye, E. B.
Gallison, J. M.
Galloupe, C. W.
Gannett, W. W.
Garbelnick, D. A.
Garland, G. M.
George, A. W.
Germain, H. H.
Gilman, C. S.
Gilpatrick, R. H.
Goddu, L. A. O.
Golden, Lazarus
Goldthwait, J. E.
Goodale, J. L.
Goodall, H. W.
Grainger, E. J.
Granger, F. B.
Grant, W. H.
Graves, W. P.
Gray, Horace
Gray, H. B.
Green, C. M.
†Green, J. O.
Green, M. C.
Green, R. M.
†Green, S. A.
Greene, D. C., Jr.
Greene, E. M.
Grogan, M. V.
Gunter, F. C.
Haley, W. T.
Hall, G. W.
Hall, W. D.
Hamilton, A. J. A.
Hamilton, A. L.
Harding, G. F.
Hare, C. H.
Harmer, T. W.
Harrington, T. F.
Harrison, C. W.
Harrison, Henry
Hartung, H. H.
Harvey, W. W.
Hartwell, H. F.
Haskins, F. E.
Hawes, J. B., 2nd
Healy, William
Hebbard, E. C.
Heffernan, D. A.
Hegerty, J. G.
Henderson, F. F.
Hepburn, J. J.
†Hersey, F. C.
Hewes, H. F.
Higgins, F. A.
Hill, G. S.
Hill, T. C.
Hipkiss, George
Hitchcock, Edward
Hodgdon, F. W., Jr.
Hodgkins, E. M.
Hogner, R. P. F.
Hollings, Byam
Holmes, E. M.
Hornor, A. A.
Houghton, N. H.
Howard, A. G.
Howard, C. T.
Howard, H. H.
Howard, H. J.
Howe, O. T.

BOSTON (continued).
Howe, W. C.
Howland, J. B.
Hubbard, J. C.
Hughes, L. A. C.
Hunt, D. L.
Huntington, J. L.
Hurley, J. J.
Hutchins, H. T.
Hyde, H. V.
Hyman, C. H.
Irving, F. C.
Irving, H. W.
Jack, E. E.
Jack, F. L.
Jackson, D. L.
Jackson, Henry
Jackson, J. M.
Janes, A. P.
Jantzen, F. T.
Jelly, A. C.
Johnson, F. M.
Johnson, F. W.
Jones, D. F.
Jones, M. S.
Jordan, E. M.
Joslin, E. P.
Katsainos, G. M.
Keenan, G. F.
Keenan, J. A.
Kelley, E. R.
Kellogg, E. B.
Kellogg, F. L.
Kellogg, F. S.
Kennedy, A. G.
Kepler, C. O.
Kerr, I. D.
Khoury, Kamel
Kilburn, H. W.
Kimpton, A. R.
King, F. A.
Kissock, R. J.
Knapp, P. C.
Knowlton, W. M.
Konrad, F. C. W.
Lacey, W. H.
Ladd, Maynard
Ladd, W. E.
Lahey, F. H.
Larrabee, R. C.
†Lawrence, R. M.
Lee, H. J.
Leen, T. F.
Legg, A. T.
Leland, G. A.
Leland, G. A., Jr.
Leland, H. A.
L'Esperance, O. R. T.
Levins, N. N.
Lindquist, C. A.
Little, J. M., Jr.
Lloyd, H. D.
Locke, E. A.
Loder, H. D.
Lord, F. T.
Lorimer, Felix
Lothrop, H. A.
Lovett, R. W.
Lowell, F. L.
Luce, LeR. A.
Lund, F. B.
Lyman, Henry
MacAusland, A. R.
MacAusland, W. R.
MacCallum, W. P.
McClintock, F. B.
MacCormick, J. A.
McCurdy, T. E. A.
McDonald, S. J.
MacIver, G. O.
MacKinnon, D. L.

BOSTON (continued).
MacKnight, W. F.
McLaughlin, A. J.
MacLennan, A. D.
Madden, W. D.
Magrath, G. B.
Mahoney, D. F.
Mahoney, J. L.
Marble, H. C.
Marcy, H. O.
Margeson, R. D.
Marshall, H. W.
Martin, J. F.
Marvin, F. W.
Mason, N. R.
Mead, L. G.
Means, J. H.
Medalia, D. B.
Medalia, L. S.
Mendelsohn, Louis
Merrill, A. S.
Miller, G. F.
Miller, R. H.
Minot, G. R.
Minot, J. J.
Mixter, C. G.
Mixter, S. J.
Mixter, W. J.
Monks, G. H.
Moore, G. C.
Moore, J. H.
Morgan, C. R.
Morgan, John
Morong, A. B.
Morrison, L. B.
Morrison, W. R.
Morse, G. W.
Morse, J. L.
Mosher, H. P.
Murphy, F. C.
Murray, B. F.
Myers, S. W.
Mysel, Philip
New, W. S.
Newell, F. S.
†Nichols, A. H.
Nichols, E. H.
Nolen, W. F.
Noyes, M. L.
Nute, A. J.
Ober, F. R.
O'Brien, T. J.
O'Hare, J. P.
Oliver, E. L.
†Oliver, H. K.
O'Neil, R. F.
Osgood, R. B.
O'Sullivan, Anna
Otis, E. O.
Otis, W. J.
Ott, G. J.
Overlander, C. L.
Packard, A. E.
Packard, Horace
Page, A. K.
Page, C. G.
Paine, A. K.
Palfrey, F. W.
Palmer, Ezra
Palmer, S. E.
Palmer, W. W.
Papas, P. N.
Parker, W. S.
Paul, L. G.
Paul, W. E.
Pavlo, S. G.
Payne, J. H.
Pearl, S. M.
Pease, E. A.
Pemberton, F. A.
Penhallow, D. P.

BOSTON (continued).
Phaneuf, L. E.
Phelps, J. S.
Phipps, Cadis
Pike, W. C.
Piper, Frank
Place, E. H.
Poirier, G. H.
Pollock, H. M.
Pond, B. W.
Pope, E. F.
Porter, C. A.
Post, Abner
Powers, G. H.
Praino, Gaetano
Preble, W. E.
Prince, Morton
Putnam, J. J.
Quackenboss, Alexander
Quest, J. F.
Rabe, E. R. E.
Reardon, T. J.
Reed, Carlisle
Reeves, Marcellus
Reggio, A. W.
Reynolds, Edward
Rice, W. H.
Richards, C. G.
†Richards, G. E.
Richardson, A. G.
Richardson, E. P.
Richardson, Oscar
Richardson, W. L.
Riley, Augustus
Riley, E. A.
Ripley, H. W.
Risley, E. H.
Robbins, E. D.
Robbins, W. B.
Robey, W. H., Jr.
Rogers, A. E.
Rolfe, W. A.
Rosen, D. W.
Rothblatt, H. L.
Rushmore, Stephen
Ryder, B. McW.
Ryder, W. I.
Sabine, J. D. K.
Sadler, R. A.
Saltz, S. M.
Sanborn, G. P.
Sargent, G. A.
Sawyer, E. K.
Scannell, D. D.
Schirmer, J. W.
Scott, N. McL.
Scudder, C. L.
Sears, G. G.
Sears, H. F.
Seymour, Malcolm
Shapira, A. A.
Shattuck, F. C.
Shattuck, G. B.
Shattuck, G. C.
Shaw, Albert J.
Shaw, Arthur J.
Sheldon, R. F.
Shields, W. S.
Shohan, Joseph
Simmons, C. C.
Sisson, W. R.
†Skinner, E. M.
Slack, F. H.
Smith, Conrad
Smith, C. M.
Smith, E. W.
Smith, G. C.
Smith, G. G.
Smith, H. H.
Smith, M. A.

BOSTON (continued).
Smith, P. M.
Smith, R. M.
Smith-Petersen, M. N.
Sobotky, Irving
Soutter, Robert
Sowles, H. K.
Spalding, J. D.
Spinney, F. I.
Sprague, F. P.
Sprague, R. B.
Stacey, C. F.
Stack, J. J.
Standish, Myles
Stedman, George
Stone, J. S.
Storer, Malcolm
Streeter, E. C.
Strong, R. P.
†Stuart, J. H.
Sullivan, C. B.
Sumner, P. S.
Supple, E. A.
Swain, H. T.
Swift, E. H.
Swift, J. B.
Swift, W. B.
Talbot, F. B.
Taylor, E. W.
Temple, W. F.
Temple, W. F., Jr.
Tenney, Benjamin
Tenney, J. A.
Thomas, J. J.
Thompson, C. O.
Thompson, P. H.
Thorndike, Augustus
Thorndike, Paul
Thorndike, T. W.
Thornton, J. B.
Tingley, L. P.
Titus, R. S.
Tobey, G. L., Jr.
Tobey, H. G.
Torbert, J. R.
Towle, H. P.
Townsend, C. W.
Trayes, W. H., Jr.
†Trull, W. B.
Twombley, E. L.
Tyrode, M. P. O. V.
Van de Velde, Honoré
Verhoeff, F. H.
Vietor, A. C.
Vincent, Beth
Vose, R. H.
Wadsworth, R. G.
Walker, D. H.
Walsh, E. F.
Walton, G. L.
Wardwell, J. K.
Warren, John
Warren, J. Collins
Washburn, F. A.
Washburn, G. H.
Waterman, G. H.
Watson, F. S.
Webster, G. A.
Wells, Frank
Wentworth, A. H.
Wheet, H. R.
Whipple, F. H.
White, C. J.
White, F. W.
Whitney, C. M.
Whitney, W. F.
Whittemore, Wyman
Wickham, T. W.
Wilcox, DeW. G.
Wilinsky, C. F.

BOSTON (continued).
Williams, D. L.
Williams, F. H.
Williams, Harold
Williams, H. C.
Williams, Hugh
Williams, J. T.
Wilson, E. W.
Winslow, Frederick
Withington, P. R.
Wolbach, S. B.
Wood, N. K.
Wright, J. H.
Wright, W. L.
Wylie-Cushman, E. R.
Wyman, E. T.
Young, E. L., Jr.
Young, E. B.
Young, E. W.

BOURNE (Barnstable).
(See also: Sagamore.)

BOXBOROUGH (Middlesex North).

BOXFORD (Essex North).

BOYLSTON (Worcester).

Bradford (HAVERHILL).
Anthony, F. W.
Atwood, G. M.
Brainerd, W. S.
George, L. H.
LeGro, L. B.
Littlefield, M. C.
O'Toole, J. L.

BRAINTREE (Norfolk South).
(See also: South Braintree.)
Berry, W. D.
Cook, J. W.
Dearing, H. L.
Gile, F. H., Jr.
Gould, C. H.
Record, Harold

BREWSTER (Barnstable).
Crocker, L. A.

BRIDGEWATER (Plymouth).
(See also: East Bridgewater and State Farm).
Carr, A. W.
Hunt, A. F.
Hunt, W. E.
†Pratt, Calvin
Warren, F. L.
Whelan, E. V.

Brighton (Middlesex South.) (BOSTON).
(See also: Allston.)
Broderick, T. F.
Buckley, W. S.
Budreski, A. F.
Crosby, W. H.
Doherty, F. J.
Gwinnell, A. W.
Larrabee, F. W.
Moore, M. T. V.
O'Brien, E. J.
Rice, F. W.
Ripley, W. L.
Rowen, H. S.
Stanton, Joseph
Tinkham, O. G.
Willey, W. B., Jr.

BRIMFIELD (Hampden.)
Sawin, R. V.

BROCKTON (Plymouth).
(See also: Campello.)
Alfred, James
Alley, L. A.
Bacon, J. E.
Barrett, M. F.
Beals, A. L.
Boucher, G. H.
Brady, J. E.
Brides, A. E.
Buckley, G. A.
Burnett, F. H.
Butler, D. M.
Callahan, J. F.
Chase, H. A.
†Clark, E. W.
Cloudman, H. R.
Condrick, J. J.
Constans, F. E.
Dacy, C. J.
Drohan, J. H.
Ducy, W. D.
Fullerton, W. W.
Ginsburgh, N. H.
Goddard, H. E.
Goddard, S. W.
†Gruver, S. J.
Keith, W. C.
Lawrence, J. H.
Leavitt, P. H.
LeMay, A. M.
Lupien, H. J.
McCann, C. D.
McCarthy, T. H.
McNamara, J. J.
Miles, C. G.
Millet, C. S.
Moore, G. A.
Murdock, F. W.
Noyes, J. R.
O'Brien, F. W.
Packard, L. B.
Paine, A. E.
Pettey, J. A.
Ripley, F. J.
†Robinson, L. M.
Safford, W. P.
Shaw, J. P.
Simmons, F. A.
Smith, A. C.
Sullivan, A. J.
Tuholski, D. B.

BROOKFIELD (Worcester).
Newhall, L. T.
Sherman, M. H.

BROOKLINE (Norfolk).
(See also: Waban.)
Adams, J. D.
Adams, Z. B.
Bail, J. W.
Barnes, H. A.
Blakely, D. N.
Blanchard, B. S.
Borden, C. R. C.
Boutwell, H. K.
Bowditch, H. I.
Bowker, E. M.
Brainerd, J. B.
Brigham, E. H.
Bufford, J. H.
Bulfinch, G. G.
†Call, Norman
Carr, G. L.
Casselberry, C. M.
Channing, Walter
Chase, H. L.
Cleaves, F. H.
Cohen, J. P.
Connelly, J. E.

BROOKLINE (continued).
Coolidge, Algernon
Cooper, Almon
Cornwall, A. P.
Crabtree, E. G.
Cushing, A. A.
Cushing, Harvey
Cutts, H. M.
Dalton, C. H.
Dana, H. W.
Deal, E. E.
Denny, F. P.
Dewis, J. W.
Dreyfus, E. W.
Emerson, F. P.
Fairbanks, A. W.
Fallon, J. F.
Farr, E. L.
Fay, W. E.
Francis, C. S.
Francis, G. H.
Freedman, L. M.
Gilbert, L. W.
Glunts, David
Good, F. L.
Graham, Douglas
Greenough, R. B.
Haines, Ignatius
Hastings, R. W.
Hatch, R. A.
Hayes, F. L.
Heydemann, Martin
†Hills, W. B.
Hinckley, J. W.
Hixon, E. C.
Homans, John
†Hood, M. G.
Howard, A. A.
Hurwitz, A. J.
Inglis, H. J.
Ingraham, L. V.
Jones, Everett
Jones, F. E.
Jones, J. C.
Kaan, G. W.
Kennealy, J. H.
Kickham, C. J.
Kingman, R. A.
Kittredge, Joseph
Lancaster, W. B.
Lawrence, C. H., Jr.
Lee, W. T.
Liebman, William
Litchfield, W. H.
Lyle, E. B.
Mackie, W. C.
McDonald, W. J.
McLaughlin, H. V.
McMahon, F. J.
Mallory, F. B.
Nissen, H. A.
Parris, R. O.
Patten, S. K.
Pearce, A. C.
Percy, K. G.
Perry, H. J.
Powers, H. H.
Pratt, J. H.
†Purvis, C. B.
Quimby, W. C.
Reynolds, H. V.
Rogers, E. A.
Rosenau, M. J.
Sabine, G. K.
Saunders, E. L.
Shanahan, T. J.
Sibley, B. E.
Smith, W. H.
Smyth, D. C.
Smyth, P. S.
Spalding, F. M.

BROOKLINE (continued).
Spear, L. M.
Stedman, H. R.
Toohey, T. V.
Torney, G. H.
Vickery, H. F.
Walker, I. C.
†Webber, S. G.
Whittier, F. F.
Williams, A. G.
Williams, F. H.
Williams, F. P.
Young, J. F.

***Bryantville* (PEMBROKE).**
Charles, O. W.

BUCKLAND (Franklin).

BURLINGTON (Middlesex East).

CAMBRIDGE (Middlesex South).
(See also: East Cambridge.)
Adams, C. W.
Andrews, R. E.
August, Albert
Bacon, N. S.
Bailey, M. H.
Barnes, F. J.
Boyle, J. J.
Brassil, T. F.
Bresnihan, F. S.
Brousseau, W. G.
Bryant, L. L.
Bucholz, C. H.
Buehler, G. V. B.
Burke, W. H., Jr.
Cady, F. B. M.
Cahill, C. S.
Call, E. L.
Cannon, W. B.
Chalfen, S. E.
Clarke, Genevieve
Clarke, I. L.
Cleary, James
Cogswell, G. P.
Cronin, H. J.
Cunningham, J. H.
Cunningham, T. E., Jr.
Darling, E. A.
Davis, B. D.
Dearborn, G. V. N.
Derby, W. P.
Donahue, W. F.
Dow, D. C.
Downing, A. F.
†Driver, S. W.
Dudley, A. W.
Dunham, A. F.
Dwyer, J. E.
Dwyer, J. E., Jr.
†Ela, Walter
Feeley, C. P.
Feeley, W. C.
Finnigan, P. J.
Fleet, W. E.
Fleming, P. J.
Foster, C. C.
Gardner, H. M.
Garrick, N. H.
Goodridge, F. J.
Greene, J. A.
Hapgood, L. S.
Heaton, T. H.
Hopkinson, George
Hutchinson, C. M.
Jouett, F. R.
Kelleher, P. F.
Kennelly, J. G.
King, M. L.

CAMBRIDGE (continued).
LaMarche, W. J.
Lancaster, S. R.
Lee, R. I.
Lockhart, J. S.
MacKillop, Daniel
Mackechnie, A. N.
McAdams, P. S.
McCarthy, E. A.
McGirr, F. F.
McIntire, G. F.
McIntire, H. B.
McKenzie, J. R.
Mernin, M. T.
Murphy, J. J.
Myles, L. T.
Nason, O. C. B.
Nelligan, J. P.
Nelson, C. A.
Noonan, W. A.
Norris, A. P.
Norton, G. E.
O'Rourke, E. J.
Page, G. T.
Partridge, T. J.
Peirce, B. H.
Potter, A. C.
Preble, Wallace
Putnam, W. A.
Rice, F. F.
Richards, C. R.
Robb, Hunter
Robertson, J. W.
Rockwell, J. A., Jr.
Rose, W. M.
Ross, Elizabeth
Seavy, H. L.
Sennott, J. R.
Sever, J. W.
Shannon, N. V.
Simonds, F. A.
Smillie, W. G.
Smith, J. H.
Smith, J. J.
Somers, J. E.
Southard, E. E.
Southard, M. A.
Stevens, E. H.
Stevens, H. P.
Sullivan, F. A.
Swaim, L. T.
Swan, W. D.
Taylor, F. W.
Thomas, C. H.
Thomas, W. K. S.
Thompson, J. S.
Trainor, J. A.
Tuttle, A. H.
Verde, Luigi
Wadden, J. M.
Walcott, H. P.
†Walker, A. C.
Wells, C. E.
Wetherbee, Roswell
White, G. A.
Whittemore, W. S.
Whoriskey, J. J.
Williams, E. R.
Williams, F. E.

Campello (BROCKTON).
Averill, J. H.
Caswell, W. E.
Frost, E. W.
Holmberg, C. L. M.
King, N. C.

Canton (Norfolk).
Daniels, D. G.
Fish, J. E.
Hinton, W. A.
Kemp, L. S.
Luce, D. S.
MacPherson, W. E.
Tenney, W. N.

Carlisle (Middlesex North).

Carver (Plymouth).

Charlemont (Franklin).

Charlestown (Middlesex South).
(BOSTON).
Duff, John
Duff, John, Jr.
Fitzpatrick, J. J.
Flagg, H. H.
Grandison, W. G.
Hammond, W. P.
Hurley, D. J.
Lyons, J. B.
Magurn, F. T. L.
McDermott, J. E.
McNally, W. J.
Morris, M. A.
O'Brien, J. F.
Patterson, W. F.
Plummer, E. M.
Silva, F. P.
Sprague, R. W.
Wood, N. M.

Charlton (Worcester).

Chatham (Barnstable).
†Gifford, B. D.

Chelmsford (Middlesex North).
(See also: North Chelmsford.)
Howard, Amasa
Scoboria, A. G.

CHELSEA (Suffolk).
Aaronson, Jacob
†Chipman, W. R.
Cutler, C. N.
Dennett, P. C.
Fenwick, G. B.
Garrett, F. S.
Golob, Meyer
Guild, E. F.
McClintock, F. B.
Meyers, H. B.
Nigro, Michele
†Putnam, J. M.
Raddin, F. S.

Cheshire (Berkshire).

Chester (Hampden).
Lanpher, H. A.

Chesterfield (Hampshire).

Chestnut Hill (NEWTON).
Baldwin, H. T.
Briggs, E. C.
Curtis, F. G.
Gay, G. W.
Holmes, G. W.
Johnson, M. W. L.

CHICOPEE (Hampden).
(See also: Chicopee Falls, Willimansett.)
Gallagher, J. H. C.

Chicopee Falls (CHICOPEE).
Beauchamp, J. O.
Cooley, A. L.
Dutton, F. K.
†Gibbs, L. J.
Mannix, L. E.
Shea, M. I.

Chilmark (Bristol South).

Clarksburg (Berkshire).

Cliftondale (SAUGUS).
Danforth, H. A.
Harris, L. W.
Penny, H. T.
Penny, M. M.
Perkins, T. T.

Clinton (Worcester).
Abbott, C. R.
Bowers, W. P.
Chase, G. L.
French, C. L.
Goodwin, J. J.
Grady, P. A. S.
Grady, T. H.
Kirby, J. R.
Mackay, E. H.
Monahan, J. A.
Morse, I. M.
Tobey, G. L.

Cochituate (FRAMINGHAM).
Sparks, E. E.

Cohasset (Norfolk South).
Hinchliffe, Frederick
Howe, O. H.
Osgood, George

Colrain (Franklin).
Cram, J. W.
Mather, J. A.

Concord (Middlesex South).
(See also: Concord Junction.)
Cheney, F. E.
†Emerson, E. W.
Lord, S. A.
Titcomb, G. E.
Walcott, H. J.
Wentworth, M. H.

Concord Junction (CONCORD).
Fernald, G. G.
Pickard, I. L.

Conway (Franklin).

Cotuit (BARNSTABLE).
Haskins, S. F.

Cummington (Hampshire).
†Stutson, W. P.

Cushman (AMHERST).
Fuller, A. H.

Dalton (Berkshire).
MacKay, G. F.
Schofield, W. W.
Sullivan, P. J.

Dana (Worcester).
(See also: North Dana.)

Danvers (Essex South).
(See also: Hathorne.)
Baldwin, F. W.
Buck, C. L.
Deering, C. F.
Mains, H. L.
Marsh, A. P.
Moriarty, J. J.
Niles, E. H.
Sparhawk, C. W.

DARTMOUTH (Bristol South).
(See also: South Dartmouth.)

DEDHAM (Norfolk).
(See also: East Dedham.)
Batchelder, H. G.
Finn, E. W.
Hodgdon, A. H.
Pratt, J. W.
Worthington, A. M.
Young, W. H.

DEERFIELD (Franklin).
(See also: South Deerfield.)
Thorn, E. C.

DENNIS (Barnstable).
(See also: Dennisport, South and West Dennis.)

Dennisport (DENNIS).
Ginn, D. R.

DIGHTON (Bristol North).
Baker, H. B.

Dorchester (Norfolk) (BOSTON).
(See also: Mattapan.)
Abbe, F. R.
Adams, H. W.
Allard, C. E.
Bailey, F. J.
Ballou, A. R.
Barker, W. W.
Batchelder, W. B.
Berlin, M. G.
Borman, M. I.
Bliss, G. D.
Bogan, F. L.
Brayton, R. W.
Brearton, E. J.
Brown, F. B.
Butler, J. E.
Carroll, C. C.
Carruth, S. S.
Cavanaugh, C. R.
Ceconi, J. A.
Coffin, A. B.
Costello, J. H.
Croke, L. W.
Crossman, F. A.
Crowell, Samuel
Curran, S. F.
Davis, W. H.
Davison, A. H.
Day, E. P.
Dervin, P. J.
Devenny, J. H.
Dewey, C. G.
Dexter, R. B.
Dobson, W. M.
Draper, A. L.
Drummey, N. D.
Duckering, W. W.
Eldridge, D. G.
Emerson, F. L.
Emery, W. C.
Evans, M. H. A.
Faxon, E. W.
Fennessey, J. F.
Foster, A. N.
Gaetani, A. L.
Giblin, F. J.
Golub, J. J.
Gordon, S. F.
Graves, B. A.
Hallisey, J. E.
Hammond, W. J.
Hardwick, E. V.
Hartnett, E. H. L.
Harrington, D. J.

Dorchester (continued).
Harrington, H. L.
Hawkins, Henry
Hemeon, F. C.
Ingoldsby, J. E.
Johnston, William
Kelley, H. J.
Kelley, J. H. H.
Kelly, J. M.
Kent, Bradford
Lane, J. W.
Levine, H. B.
Loewe, W. R.
Macauley, J. A.
Macdonald, A. A.
McCartin, J. E.
McEvoy, G. A.
McQuade, L. S.
Mahoney, F. X.
Mains, C. F.
Mansfield, J. A.
Marr, M. W.
Martin, D. L.
Martin, H. W.
May, J. V.
Merrick, R. M.
Miller, C. H.
Morrison, Hyman
Murray, P. J.
Myrick, H. G.
Noble, M. G.
Norton, H. R.
Nute, Marion
O'Brien, J. J.
Osman, C. F.
Parker, W. H.
Parsons, F. S.
Parvey, Benjamin
Phillips, W. F.
Rapoport, Boris
Regan, J. J.
Reilly, J. A.
Roberts, L. A.
Rogers, O. F.
Rogers, O. F., Jr.
Rood, L. C.
Scales, R. B.
Scanlan, T. J.
Schmidt, R. D.
Shapira, V. I.
Sheppard, P. A. E.
Sherburne, A. E.
Sleeper, F. W.
Starbird, E. P.
†Stevens, G. B.
Stone, H. E.
Sturnick, Max
Sullivan, J. J.
Sullivan, J. T.
Thurber, M. T.
Towle, H. C.
Treanor, J. P.
Twitchell, E. T.
Walton, W. J.
Watson, F. G.
Watts, H. F. R.
White, P. D.
Williams, Joseph
Wylie, E. C.

DOUGLAS (Worcester).

DOVER (Norfolk).
Emmons, A. B., 2nd.

DRACUT (Middlesex North).

DUDLEY (Worcester).

DUNSTABLE (Middlesex North).

DUXBURY (Plymouth).
†Durgin, S. H. (Millbrook P. O.)
Noyes, N. K.
Spalding, Roger

East Boston (BOSTON).
Bonney, Robert
Bowen, E. E.
Bragdon, H. E.
Ensworth, W. H.
†Grainger, W. H.
Hartnett, E. D.
Houghton, R. H.
Hudson, C. B.
Hurley, D. B.
Morrison, W. A.
Myers, Solomon
O'Keefe, M. W.
Papen, G. W.
Schwartz, G. H.
Sisson, Mitchell
Tallman, A. L.
Taylor, J. D.
Tilton, F. H.

East Bridgewater (BRIDGEWATER).
Bannerman, W. B.

East Cambridge (CAMBRIDGE).
Clancy, W. H.
Fair, J. F.

East Dedham (DEDHAM).
Drew, F. P.

East Gardner (GARDNER).
Thompson, C. E.

EASTHAM (Barnstable).

EASTHAMPTON (Hampshire).
Burke, J. J.
Cobb, O. W.
Hiltpold, Werner
Pond, L. B.
Williams, E. D.
Winslow, E. S.

East Longmeadow (LONGMEADOW).
Curtis, H. F.

East Norfolk (NORFOLK).
Neff, I. H.

EASTON (Bristol North).
(See also: North Easton.)

East Taunton (TAUNTON).
Adams, W. C.

East Walpole (WALPOLE).
Vivian, W. J.

East Weymouth (WEYMOUTH).
Doucett, F. L.
Fraser, J. C.
Libby, J. H.

EDGARTOWN (Bristol South).
Worth, E. P.

EGREMONT (Berkshire).

ENFIELD (Hampshire).
Segur, W. B.

ERVING (Franklin).
Johnson, F. E.

ESSEX (Essex South).
Steeves, E. C.

EVERETT (Middlesex South).
Bass, Harris
Bruce, J. A.
Conroy, P. J.
Cornish, S. W.
Dickinson, G. W.
Hanson, W. G.
Harrington, C. W.
Howe, W. L.
Jackson, A. A.
Keaney, H. J.
McAllester, R. W.
McQuaid, T. B.
Morris, R. H.
Niles, J. O. G.
Ordway, C. A.
Rogers, F. A.
Whitehill, G. E.
Young, E. W.

Fairhaven (Bristol South).
Horne, L. W.

FALL RIVER (Bristol South).
Abbe, A. J.
Almy, Thomas
Barnes, F. R.
Barré, J. A.
Blanchette, W. H.
Blood, G. W.
†Bowen, S. W.
Bright, J. C.
Brown, R. F.
Buck, A. W.
Butler, G. E.
Butler, R. B.
Butler, W. H.
Chace, F. A.
Cone, D. E.
Connell, A. I.
Creamer, W. H.
Crispo, P. T.
Curry, E. F.
Dolan, W. A.
Fennelly, D. J.
French, R. W.
Gifford, J. H.
†Gilbert, John
Gordon, S. M.
Gunning, T. F.
Herbert, Edward
Hicks, G. H.
Jackson, O. H.
Jackson, R. W.
Kerrigan, J. J.
King, G. C.
LaLiberté, E. J.
Learned, W. T.
Lewis, A. C.
Lindsey, J. H.
Lowney, J. F.
MacKnight, A. S.
Macrae, A. C.
Marvell, M. W.
McCarthy, E. A.
Merritt, S. V.
Morriss, W. S.
Normand, J. N.
O'Brien, J. F.
Partington, C. B.
Pritchard, W. P.
Richards, G. L.
Ryder, D. R.
Sandler, Samuel
Simmons, R. H.
Stansfield, C. W.
Sullivan, L. J.
Sundelöff, E. M. E.
Synan, W. E.
Tennis, M. N.
Trainor, J. B.

FALL RIVER (continued).
Truesdale, P. E.
Wardle, Henry
Warren, T. F.
Wilbur, H. G.
Wright, W. F.

Falmouth (Barnstable).
(See also: Waquoit and West Falmouth.)
Tripp, E. P.

Feeding Hills (Agawam).
Hastings, J. W.

Fisherville (Grafton).
Charbonneau, N. N.

Fiskdale (Sturbridge).
†Rice, A. B.

FITCHBURG (Worcester North).
Baker, L. F.
Barton, J. A.
Burns, R. F.
Carey, B. W.
Chandler, C. L.
Church, C. H.
Donovan, T. R.
Finnigan, F. A.
Fish, Louis
Fiske, E. L.
Fregeau, A. N.
Gay, C. B.
Jacques, Hector
Jennings, C. H.
Jones, R. C.
Kearney, J. H.
Killelea, E. V.
Lane, C. R.
Lowell, A. P.
McMurray, F. M.
Mason, A. P.
Miller, E. P.
Morgner, R. A.
Norton, G. P.
O'Malley, E. F.
Quessey, A. H.
Rice, R. A.
Rodrick, A. F.
Sawyer, W. F.
Stimson, J. W.
Thompson, F. H.
Thompson, F. H., Jr.
Tully, E. J.
Woodworth, D. S.

Florence (NORTHAMPTON).
Taylor, Walter

Florida (Berkshire).

Forest Hills (Norfolk) (BOSTON).
Prescott, W. H.

Foxborough (Norfolk).
Bragg, F. A.
Carlisle, F. H.
Crocker, B. P.
Kenworthy, M. E.
Moore, F. P.

Framingham (Middlesex South).
(See also: Cochituate, Framingham Center.)
Armstrong, D. B.
Baldwin, S. O.
Benner, H. O.
Bodwell, W. M.
Dodd, J. E.
Flett, P. McN.

Framingham (continued).
Glass, James
Harriman, C. E.
Healy, D. L.
Jessaman, L. W.
Morrow, W. R.
Owen, A. S.
Palmer, L. M.
Potter, F. W.
Potter, J. C.
St. Clair, A. E.
Spaulding, E. R.
Sullivan, E. A.

Framingham Center (Framingham).
Bigelow, E. H.
Stone, A. K.

Franklin (Norfolk).
†Faxon, E. M.
Gallison, A. J.

Freetown (Bristol North).
Briggs, C. A.

Gardner (Worcester North).
(See also: East Gardner.)
Andrews, Oren
Bailey, C. H.
Bone, H. D.
Ellam, H. W.
†Greenleaf, J. R.
Heininger, A. G.
Lachance, A. P.
Lowell, A. F.
Lundwall, L. S. B.
McClintock, Elsie
Paine, H. L.
Sawyer, E. A.
Smith, W. D.
Waters, J. E.

Gay Head (Bristol South).

Georgetown (Essex North).
Holmes, H. F.
Hoyt, E. M.
†Root, R. B.
Root, R. R.

Gill (Franklin).

GLOUCESTER (Essex South).
(See also: Annisquam.)
Burnham, Parker
Carvell, Hanford
Choate, H. H.
Cook, S. P. F.
Egan, J. J.
Finegan, D. J.
†Garland, A. S.
Garland, Roy
Hallett, E. B.
Hubbard, E. D.
Knowles, J. H.
Moore, P. P.
Mooring, S. W.
Morrow, C. H.
Proctor, P. C.
Rowley, William
Shinn, P. A.
Torrey, A. S.

Goshen (Hampshire).

Gosnold (Bristol North).

Granby (Hampshire).
Grafton (Worcester).
(See also: Fisherville and North Grafton.)
Guild, F. W.

Granville (Hampden).
White, C. A.

Great Barrington (Berkshire).
(See also: Housatonic.)
Chapin, C. S.
Kennedy, E. A.
Parks, S. H.

Greenfield (Franklin).
Best, E. G.
Canedy, C. F.
Clark, W. K.
Croft, B. P.
Greenough, C. M.
Howe, H. N.
Johnson, A. E., Jr.
Kemp, H. M.
McConnell, D. J.
Millett, F. A.
O'Brien, J. C.
Stetson, H. G.
Twitchell, G. P.
Zabriskie, F. H.

Greenwich (Hampshire).

Groton (Middlesex North).
Kilbourn, A. G.

Groveland (Essex North).
Bagnall, E. S.

Hadley (Hampshire).
Johnson, H. L.
Smith, F. H.

Halifax (Plymouth).

Hamilton (Essex South).
(See also: South Hamilton.)
Corcoran, J. G.

Hampden (Hampden).

Hancock (Berkshire).

Hanover (Plymouth).
Hammond, Charles
†MacMillan, A. L.

Hanson (Plymouth).

Hardwick (Worcester).

Harvard (Worcester).
Royal, H. B.

Harwich (Barnstable).
(See also: West Harwich.)
Handy, H. D.
Miller, P. F.

Hathorne (Danvers).
Brewster, D. T., Jr.
Bryan, W. A.
Chronquest, A. P.
Kandib, A. H.
Macdonald, J. B.
Patterson, A. M.
Thompson, W. J.
Trueman, N. G.

Hatfield (Hampshire).
†Barton, C. M.
Bonneville, A. J.
Byrne, C. A.

HAVERHILL (Essex North).
(See also: Bradford.)
Armitage, H. G.
Benson, C. S.

HAVERHILL (continued).
Bryant, J. E.
Capeles, T. F.
Carden, C. J.
Chaput, L. R.
†Chase, I. E.
Clarke, I. J.
Coffin, F. H.
Cogswell, William
Conner, H. L.
Coon, W. H.
Cooney, M. B.
Cotter, T. F.
Croston, J. F.
Donahue, Hugh
Dunn, C. S.
Durant, C. E.
Ferrin, W. W.
Fitzgerald, J. J.
George, A. P.
Holbrook, C. A.
Holden, W. D.
Hubbell, A. M.
Kelleher, J. E.
Laskey, E. P.
Macdougall, Duncan
McFee, W. D.
McLaughlin, A. O.
Mindlin, Carl
Mysel, H. A.
Nettle, Paul
Perkins, H. B.
Pierce, F. B.
Pitcher, H. F.
Popoff, Constantine
Robinson, W. P.
Ruel, J. A.
Sproull, John
Still, C. W.
Stokes, L. T.
Stone, T. N.
Sullivan, F. A.
Symonds, A. G.
Trull, A. C.
Whitney, G. B.
Whitten, G. E.

Hawley (Franklin).

Haydenville (Williamsburg).
Perry, C. E.
Wheeler, C. H.

Heath (Franklin).

Hingham (Norfolk South).
Day, C. O.
Dorr, C. A.
Morse, A. G.
Peterson, J. A.
Spooner, L. H.
Whelan, Charles

Hinsdale (Berkshire).

Holbrook (Norfolk South).
Cole, A. J.
Crawford, F. W.
Kennison, F. M.

Holden (Worcester).
Stickney, C. W.
Washburn, F. H.

Holland (Hampden).

Holliston (Middlesex South).

HOLYOKE (Hampden).
†Allen, C. A.
Allen, F. H.
Bagg, E. P., Jr.
Bauman, J. L.

HOLYOKE (continued).
Bigelow, J. B.
Bliss, J. L.
Bouvier, C. W.
Brady, W. F.
Brindamour, J. E.
Carroll, J. J.
Cavanaugh, T. E.
Celce, F. F.
Celce, J. H.
Clark, G. H.
Clarke, L. H.
Cleary, R. E.
Cox, S. C.
Davis, E. M.
Dickson, R. E.
Donoghue, D. F.
Farr, I. H.
Forster, J. F.
Franz, Adolph
Gabler, G. L.
Greaney, W. F.
Hand, E. P.
Henderson, G. D.
Holyoke, Frank
Hubbard, J. C.
Hunt, A. E. P.
Hunt, G. E.
Hurley, P. E.
Hussey, E. J.
Kilburn, I. N.
Kinne, G. L.
Knowlton, E. A.
Mahoney, S. A.
McCabe, J. J.
Monty, A. H.
Morrison, R. F.
Potts, J. H.
Powers, W. J.
Rosenbloom, C. W.
Ryan, W. P.
Shine, H. K.
Sullivan, E. F.
Taylor, G. L.
Warren, E. D.
Wetherell, A. B.

Hopedale (Worcester).

Hopkinton (Middlesex South).
Playse, L. F.

Housatonic (Great Barrington).
Jones, W. W.
Luchsinger, H. W.

Hubbardston (Worcester).
Knowlton, W. T.

Hudson (Middlesex South).
Breen, J. H.
Hunter, N. McL.

Hull (Norfolk South).
(See also: Allerton.)
Sylvester, C. P.

Huntington (Hampshire).
Mace, C. H.

Hyannis (Barnstable).
Binford, F. A.
Chase, H. B.
Harris, C. E.
Hawes, E. E.

Hyde Park (Norfolk) (BOSTON).
Baxter, E. H.
Bennett, W. H.
Bryant, C. E.
Carr, P. W.

Hyde Park (continued).
Cullen, C. A.
Ellis, E. K.
O'Connor, J. H.
Stack, C. F.

Indian Orchard (SPRINGFIELD).
Harrington, M. W.
Riordan, A. H.
Smith, S. F.
Whitney, E. W.
Whitney, H. M.

Ipswich (Essex South).
Bailey, G. G.
MacArthur, G. E.
McGinley, M. C.

Jamaica Plain (Norfolk) (BOSTON).
Anderson, V. V.
Berry, W. C.
Bigelow, A. H.
Bond, S. A.
Broderick, F. P.
†Broidrick, J. P.
Broughton, A. N.
Broughton, H. W.
Callahan, H. A.
Chadwell, D. R.
Collier, L. H. G.
Cowles, W. N.
Dane, John
Dole, K. L.
Emerson, N. W.
Emmons, H. M.
Ernst, H. C.
Faunce, C. B., Jr.
Fitz-Simmons, H. J.
Hill, L. W.
Holland, H. T.
Howland, G. L.
Johnstone, W. J.
Lane, E. B.
Leard, J. S. H.
Leary, O. C.
Leary, Timothy
McCready, L. T.
McKenna, F. P.
McMann, W. H.
Malone, Charles
Murphy, H. A.
O'Brien, W. J. L.
O'Keefe, D. T.
Ordway, M. D.
Perry, A. P.
Reid, I. E. R.
Richardson, F. L.
Richardson, M. W.
Robinson, W. H.
Rollins, E. T.
Safford, M. V.
Solomon, H. C.
Stedman, J. C.
Stone, J. G.
Turnbull, F. M.
Vickery, L. F.
Woodworth, J. D. R.

Kingston (Plymouth).
Holmes, A. B.

Lakeville (Bristol North)
Glidden, E. W., Jr.

Lancaster (Worcester).
Beckley, C. C.

Lanesborough (Berkshire).
Barnes, L. D.
Downing, F. C.

LAWRENCE (Essex North).
Adamian, H. G.
Allen, G. S.
Bain, J. B.
Bannon, J. H.
Bartley, J. J.
Beely, L. G.
Berr, A. W.
Bier, M. D.
Birmingham, R. M.
Burgess, C. J.
Burnham, J. F.
Bushold, F. G.
Calitri, Constant
Chesley, A. E.
Cody, P. W.
Conlon, F. A.
Crandall, W. M.
Cregg, F. A.
Cyr, E. E.
Daly, T. J.
Deacy, J. J.
Dorgan, J. A.
Dorion, Kinton
Dow, G. W.
Eidam, C. H.
Forster, R. W.
Fuller, E. P.
Grant, W. V.
Hilton, J. J. H.
Hogan, J. A.
Howard, J. F.
Hughes, P. J.
Joyce, T. F.
Kaplovitch, Henry
Kurth, G. E.
Lawlor, E. F.
Leith, R. B.
Lemieux, T. A.
Levek, J. A.
Manahan, H. W.
Massé, J. B.
McArdle, J. J.
McGauran, M. S.
McKallagat, P. L.
Merrill, W. H.
Moeckel, C. R.
Murphy, T. W.
Nevers, H. H.
Oeser, P. R.
O'Reilly, F. A.
O'Sullivan, J. J.
Redmond, T. H.
Riordan, W. D.
Sargent, G. B.
Sargent, O. F. L.
Scanlon, J. M.
Scarito, N. J.
Schwartz, Myer
Simon, A. L.
Sinclitico, Guiseppe
Siskind, A. L.
Sullivan, J. J.
Sullivan, M. F.
Sullivan, W. J.
Tiani, Bernardo
Uniac, T. V.
Walch, J. F.

Lee (Berkshire).
Hassett, J. J.
Markham, E. W.

Leicester (Worcester).
(See also: Rochdale.)
McNeish, Alexander

Lenox (Berkshire).
Carroll, M. J.
Jaques, H. P.

LEOMINSTER (Worcester North).
Bigelow, C. E.
Brigham, C. S.
Currier, W. E.
Hall, H. P.
Nye, H. R.
Pierce, A. H.
Pitcher, H. B.
Shultis, F. C.
Sweeney, B. P.
Wheeler, A. A.

Leverett (Franklin).

Lexington (Middlesex South).
Barnes, W. L.
Piper, F. S.
Smithwick, M. P.
Tilton, J. O.
Tyler, W. M.
Valentine, H. C.

Leyden (Franklin).

Lincoln (Middlesex South).
(See also: South Lincoln.)
Brooks, W. A.
Loring, R. G.

Littleton (Middlesex North).

Longmeadow (Hampden).
(See also: East Longmeadow.)

LOWELL (Middlesex North).
Alling, M. L.
Baker, C. S.
Beaudet, E. A.
Bellehumeur, D. S.
Benner, B. R.
Bertrand, A. E.
Blanchard, P. D.
Boyle, J. F.
Brady, F. R.
Brunelle, Pierre
Bryant, M. D.
Caisse, G. E.
Carroll, T. F.
Cassidy, J. J.
Clark, E. J.
Colburn, H. F.
Collins, W. M.
Dennett, A. G.
Drury, J. N.
Ellison, D. J.
Fishman, Maurice
French, C. E.
Gage, F. L.
Gage, J. A.
Gardner, A. R.
Giguere, A. J.
Halpin, A. J.
†Huntress, Leonard
Jackson, W. B.
Jewett, H. W.
Johnson, J. B. A.
Johnson, W. A.
Jones, R. LeR.
Jones, W. M.
Kearney, J. P.
Lambert, J. H.
Lamoureaux, J. E.
†Lathrop, W. H.
Lavalée, G. O.
†La Vigne, A. W.
Lawler, W. P.
Leahy, G. A.
Livingston, C. B.
Livingston, E. G.
Loughran, J. F.

LOWELL (continued).
Lovesey, B. E.
Mahoney, F. R.
Martin, G. F.
McAdams, J. P.
McCarty, J. J.
McCluskey, R. J.
McGannon, T. G.
Meehan, P. J.
Mehan, J. A.
Meigs, R. J.
Mignault, Rodrigue
Murphy, E. M.
Murphy, F. P.
O'Conner, J. B.
Parker, R. W.
Perkins, R. S.
Pillsbury, B. H.
Pillsbury, F. F.
Pillsbury, G. H.
Plunkett, H. B.
Pulsifer, Nathan
Robertson, E. A.
Rodger, J. V.
Roughan, C. M.
Ryan, W. F.
†Sanders, C. B.
Shaw, A. E.
†Shaw, T. P.
Simpson, C. E.
Smith, F. H.
Smith, T. B.
Stewart, R. C.
Sumner, H. H.
Sweetsir, C. L.
Tabor, E. O.
Tighe, M. A.
Van Deursen, G. L.
Viles, C. A.
Welch, E. J.
Wilson, C. D.
Young-Slaughter, E. E.

Ludlow (Hampden).
Hoyt, P. A.

Lunenburg (Worcester North).
Woods, C. E.

LYNN (Essex South).
Abbott, H. E.
†Ahearne, C. A.
Bedard, J. A.
Bennett, H. P.
Berg, T. A. J.
Bixby, O. E.
Blair, O. C.
Blaisdell, J. H.
Bowen, A. P.
Breed, N. P.
Burrows, M. C.
Burns, W. L.
Clarke, H. C.
Cobb, C. M.
Darling, A. E.
Davis, H. L.
Davis, S. R.
De Langle, C. P.
Dennison, A. S.
Devlin, P. C.
Dezell, F. B.
Donovan, M. R.
Driscoll, De C. J.
Fraser, W. L.
Garipay, E. P.
Grady, T. F.
Grant, J. H.
Gray, G. H.
Hagopian, L. G.
Harriman, Perley
Harris, A. E.

LYNN (continued).
Harris, W. DeB.
Hartman, Gustave
Hassett, L. W.
Hawes, A. T.
Hearn, W. L.
Hennessey, T. F.
Hoitt, C. L.
Hopkins, W. T.
Jenkins, C. E.
Johnson, H. A.
Jones, E. W.
Joslyn, A. E.
Judkins, C. L. M.
Judkins, F. L.
Kane, W. V.
Kirkpatrick, G. H.
Lane, F. A. (East Lynn)
Lemaire, W. F. (East Lynn)
Limauro, L. H.
Little, W. B.
Lougee, F. T.
Lougee, G. W.
Lovejoy, C. A.
Lovell, C. D. S.
Lyons, G. A.
McIntire, F. G.
McLennan, W. E.
MacRobbie, Alexander
Mangan, J. J.
Manix, E. T.
Marshall, W. R.
Martel, Stanislaus
Martin, A. H.
Martin, J. B.
Mathes, R. W.
Merrill, C. H.
Merrill, E. A.
Metzger, Butler
Morse, F. A.
Mott, G. E.
Nathanson, E. S.
Newhall, A. L.
Newhall, H. F.
Newhall, H. W.
Oak, C. A.
O'Keefe, E. S.
O'Reilly, W. F.
Peck, M. W.
Pinkham, J. G.
Rafferty, T. B.
Rich, C. E.
Ruppel, C. E. F.
Ruppel, M. D.
Sheldon, C. C.
Smith, M. C.
Stone, F. E.
Trask, J. W.
Tucker, A. W.
Underhill, S. G.
Wainshel, P. W.
Ward, W. G.
White, Everett
Worthen, C. A.
Zarella, A. M.

Lynnfield (Essex South).
Freeman, F. W.

MALDEN (Middlesex South).
Barron, E. W.
Brown, R. N.
Bychower, Victor
Clarke, M. E.
Clarke, W. E.
Conley, B. F.
Corbett, J. J.
Cummings, M. E.
Deal, G. F.
Gallagher, N. A.
Gay, F. W.

MALDEN (continued).
†Goodwin, R. J. P.
Griffin, A. G.
Hartwell, W. W.
Hoberman, Samuel
Hunt, W. E.
Jones, C. D.
Kingsbury, W. W.
Lawrence, J. W.
Lougee, W. W.
MacDonald, W. C.
MacMichael, E. H.
MacNeil, S. S. J.
McBain, W. H.
McCarthy, C. D.
McCarthy, C. D., Jr.
McCarthy, E. J.
McCarthy, L. F.
†Norris, A. L.
Plummer, F. J.
Prior, C. E.
Proctor, J. W.
Ryder, Godfrey
Silver, L. S.
Staples, C. H.
Stevens, A. J.
Thompson, R. H.
Watts, H. A.

Manchaug (Sutton).
Couillard, P. L.

Manchester (Essex South).
Blaisdell, G. W.
Glendenning, R. T.

Mansfield (Bristol North).
Allen, W. H.
Cook, J. W.
Dunbar, F. H.
Latham, B. M.

Marblehead (Essex South).
Eveleth, S. C.
Greenwood, A. M.
Haley, W. T.
Hall, H. J.
Ireson, F. R.
Prouty, I. H.
Sanborn, P. L.

Marion (Bristol South).
Cobb, A. C.
Hopkins, R. H.

MARLBOROUGH (Middlesex South).
Chalmers, H. E.
McCarthy, T. F.
Merrill, C. H.
Reilly, T. E.
Robinson, H. A.
Smith, C. W.
Stevens, R. E.
Warner, C. T.

Marshfield (Plymouth).
Bartlett, C. W.

Marshfield Hills (Marshfield).
Davis, G. R.
Strong, S. L.

Marston's Mills (Barnstable).
Higgins, J. H.

Mashpee (Barnstable).
Mattapan (Norfolk) (BOSTON)
Abbot, F. H.
Cheever, A. J.
Cheever, C. A.
Ferguson, E. H.
Fleming, P. J.

Mattapan (continued).
Grover, J. I.
Guild, T. E.
Kelley, R. E. S.
McPeake, J. R.
Morse, N. N.
Noble, E. C.
St. Denis, J. N.
Scannell, J. J.
Stearns, R. T.
White, A. J.
Winchester, G. W.

MATTAPOISETT (Bristol South).
Blaine, W. E.
Tilden, I. N.

MAYNARD (Middlesex South).
Flaherty, E. J.
Hamblen, Howard

MEDFIELD (Norfolk).
McPherson, G. E.
Mitchell, Arthur
Morse, H. L.

MEDFORD (Middlesex South).
(See also: West Medford).
Barrett, E. W.
Burke, W. T.
Chandler, N. F.
Clark, M. W.
Donnell, H. A.
Fleming, E. R.
Gahan, P. F.
Guthrie, A. D.
Ilsley, F. R.
Leavitt, M. A.
Sise, L. F.

MEDWAY (Norfolk).
(See also: West Medway.)
Yeaton, G. W.

MELROSE (Middlesex East).
(See also: Melrose Highlands.)
†Clark, J. S.
Fay, J. H.
Fish, E. C.
Jack, E. S.
Jackson, H. B.
Leonard, R. D.
Marr, E. L.
Perley, R. D.
Pike, F. F.
Raynes, M. B.
Ruble, W. A.
Sims, F. R.
Small, A. E.
Stratton, R. R.

Melrose Highlands (MELROSE).
Gage, A. T.
Harlow, C. W.
Provandie, P. H.

MENDON (Worcester).

MERRIMAC (Essex North).
Sweetsir, F. E.

METHUEN (Essex North).
Baketel, R. V.
Cushman, H. L.
Cutter, A. H.
Dearborn, H. F.
Lawlor, R. H.
McAllister, F. D.
Norris, R. C.
Nutt, W. E.
Parr, John
Reed, V. A.

MIDDLEBOROUGH (Bristol North).
Breck, Samuel
Coolidge, Sumner
Elliott, Alfred
†Ellis, G. L.
Holmes, D. H.

MIDDLEFIELD (Hampshire).

MIDDLETON (Essex South).
Ewing, G. W.

MILFORD (Worcester).
French, J. M.
Keith, H. L.
Knight, M. W.
Lally, F. H.

MILLBURY (Worcester).
Church, C. A.
Hurd, A. G.
Lincoln, J. R.

Miller's Falls (MONTAGUE).
Cudworth, C. D.

MILLIS (Norfolk).
Hill, E. L.

MILTON (Norfolk).
Bartol, E. F. W.
Edsall, D. L.
Foot, N. C.
Forbes, Alexander
Kite, W. C.
Lane, W. A.
McCarthy, F. P.
Pierce, G. B.
Pierce, M. V.
Rackemann, F. M.
Rowe, C. A.
Williams, C. H.

Mittineague (WEST SPRINGFIELD).
Downey, H. A.

MONROE (Franklin).

MONSON (Hampden).
Ellis, F. W.
Jackson, C. W.

MONTAGUE (Franklin).
(See also: Miller's and Turner's Falls.)

MONTEREY (Berkshire).

MONTGOMERY (Hampden).

MOUNT WASHINGTON (Berkshire).

NAHANT (Essex South).
Cusick, L. F.

NANTUCKET, (Bristol South).
Grouard, J. S.
Lewis, F. E.

NATICK (Middlesex South).
(See also: South Natick.)
Bancroft, G. A.
Baum, E. G.
Burke, M. F.
Cochran, W. J.
Cook, C. H.
Rowland, E. G.
Sylvester, W. H.
Walcott, W. W.

NEEDHAM (Norfolk).
(See also: Needham Highlands.)

NEEDHAM (continued).
DeLue, F. S.
MacGray, C. L.
†Mansfield, H. T.
Parker, F. D.
Pease, C. W.

Needham Highlands (NEEDHAM).
Mitchell, William

NEW BEDFORD (Bristol South).
Allen, H. C.
Atchison, C. M.
Bonnar, J. M.
Bonney, C. A., Jr.
Brunelle, A. L.
Bullard, J. T.
Burt, C. E.
Canney, E. R.
Cody, E. F.
Connor, C. F.
Croacher, A. W.
Dehn, E. W.
Donovan, S. E.
Foster, E. E.
Frasier, J. A.
Gardner, E. D.
Gennert, Jacob
Grocshinsky, Herman
Hathaway, J. G.
Hayes, S. W.
Hough, G. de N.
Howes, F. M.
Hudnut, F. J.
Johnson, E. St. J.
Kirby, H. C.
La Riviere, A. de C. E.
Leary, C. J.
Lowney, D. J.
Mandell, A. H.
Marsden, George
Mathewson, F. W.
Moncrieff, W. A.
†Nickerson, W. J.
Nield, W. A.
O'Brien, D. P.
O'Connor, P. H.
Paquin, J. U.
Pearce, G. G.
Perras, L. A.
Perry, H. E.
Peterson, C. A. B.
Pitta, J. C. da S.
Pothier, J. C.
Potter, L. F.
Pratt, C. A.
Pratt, D. D.
†Prescott, C. D.
Prevost, R. G.
Robbins, E. E.
Robbins, E. S.
Roche, T. N.
St. Germain, J. P.
Salles, J. M.
Seaver, E. P., Jr.
Segall, S. K.
Senesac, A. N.
Shanks, Charles
Stetson, F. E.
Stevens, H. L.
Taveira, A. J.
Tilton, E. E.
Turner, W. K.
Weeks, J. F.
Wheeler, E. H.
Whitney, E. M.
Winslow, B. S.
Young, E. W.

NEW BRAINTREE (Worcester).

NEWBURY (Essex North).

NEWBURYPORT (Essex North).
Day, C. C.
Hall, C. F. A.
Hamilton, R. De L.
Healy, T. R.
Hurd, R. C.
Johnson, C. F.
Little, A. N.
Nason, A. C.
Noyes, E. H.
Peter, A. J.
Shaw, J. W.
Snow, F. W.
Tigh, Frederick
Toppan, R. L.

New Marlborough (Berkshire).

New Salem (Franklin).

NEWTON (Middlesex South).
(See also: Newton Center, Newton Highlands, Newton Upper Falls, Newtonville, West Newton, Auburndale, Chestnut Hill, Waban.)
Cummings, A. C.
Dempsey, J. E.
†Eddy, G. S.
Gallagher, T. M.
Leary, A. J.
Marcy, H. O., Jr.
Marston, W. W.
Mellus, Edward
Moore, Howard
O'Donnell, F. M.
Painter, C. F.
Pearson, C. L.
Reid, W. D.
†Stone, L. R.
Stubbs, F. R.
Webber, F. W.
Young, J. H.

Newton Center (NEWTON).
Andrews, E. A.
†Crawford, S. M.
Friedman, L. V.
Hanscom, R. F.
Kirkwood, A. S.
Leonard, E. De W.
†Loring, R. P.
May, G. E.
Sylvester, P. H.
Watters, Henry
West, G. L.

Newton Highlands (NEWTON).
Bartlett, P. C.
Mellen, E. W. A.
Thompson, C. A.
Withee, F. E.

Newton Upper Falls (NEWTON).
†Everett, W. S.
McOwen, W. H.

Newtonville (NEWTON).
Baker, D. E.
Clark, F. R.
Hunt, H. O.
Hunt, W. O.
Miner, L. M. S.
Thayer, H. W.

Norfolk (Norfolk).
(See also: East Norfolk.)

Norfolk Downs (QUINCY).
Brickett, H. B.

North Abington (ABINGTON).
Curtin, J. F.
Rand, R. B.
Wheatley, F. E.
Wheatley, F. G.

NORTH ADAMS (Berkshire).
Brown, M. M.
Brown, O. J.
Brown, W. E.
Carpenter, R. J.
Curran, G. L.
Matte, J. H. A.
†Millard, H. J.
Riley, J. H.
Russell, E. E.
Stafford, F. D.
Thompson, G. H.

North Amherst (AMHERST).
Stowell, Joab.

NORTHAMPTON (Hampshire).
(See also: Florence.)
Adams, W. H.
Ball, A. N.
Bober, B. A.
Brown, E. W.
Clark, S. A.
Cobb, C. T.
Collins, J. D.
Collins, W. J.
Cooney, M. E.
Copeland, E. H.
Dow, F. E.
Fay, J. M.
†Gardner, C. R.
Gilman, Florence
Greene, E. C.
Hanson, J. G.
Hayes, J. E.
Hilliard, W. D.
Hitchcock, J. S.
Houston, J. A.
Hudnut, P. A.
Hughes, E. H.
Janes, B. F., Jr.
Leeper, M. E.
Minshall, A. G.
Perry, H. B.
Shores, H. T.
Thomas, E. E.

North Andover (Essex North).
Clark, H. A.
Smith, F. S.

North Attleborough (Bristol North).
Carley, F. J.
Gerould, J. B.
Kilby, H. S.
Shoemaker, A. B.

North Billerica (Billerica).
Forhan, N. K.

Northborough (Worcester).
†Barnes, H. J.
Stanley, J. M.

Northbridge (Worcester).
(See also: Whitinsville.)

North Brookfield (Worcester).
Phelan, E. F.

North Chelmsford (CHELMSFORD).
Varney, F. E.

North Dana (DANA).
Ellis, A. H.

North Easton (EASTON).
Porter, R. B.
Stevenson, W. M.

Northfield (Franklin).
Newton, A. L.
Philbrick, R. H. (East)
Wood, N. P.

North Grafton (GRAFTON).
Clapp, F. H.
MacIntyre, W. A.
Pattrell, A. E.
Smith, W. L.

North Oxford (OXFORD).
Stone, Byron

North Reading (Middlesex East).
Averill, C. W.
MacCorison, C. C.
Willoughby, E. C.

North Weymouth (WEYMOUTH).
Drake, W. A.

North Wilbraham (WILBRAHAM).
Damon, A. L.

Norton (Bristol North).
Round, A. M.

Norwell (Plymouth).

Norwood (Norfolk).
Fenton, A. A.
Field, H. M.
Fogg, I. S.
Gould, C. S.
Hagerty, J. J.
Hartwell, A. S.
Norton, E. C.
Plimpton, L. H.
Riemer, H. B. C.

Oakham (Worcester).

Oak Bluffs (Bristol South).

Orange (Franklin).
Leach, A. C.
Maher, H. C.
Smith, H. F. M.
Ten Broeck, S. J.

Orleans (Barnstable).
Besse, F. A.

Osterville (BARNSTABLE).
Kinney, D. D'A.

Otis (Berkshire).

Oxford (Worcester).
(See also: North Oxford.)
Fletcher, R. S.
Woodward, J. R.

Palmer (Hampden).
(See also: Bondsville, Thorndike and Three Rivers.)
Caro, Heiman
Cleaves, H. F. T.
Flood, Everett
Greene, R. A.
Hodskins, M. B.
Moore, G. A.
Schneider, J. P.

Paxton (Worcester).

PEABODY (Essex South).
Carroll, H. G.
Foss, R. E.
Foster, H. K.
Hickey, J. J.
Jordan, J. F.
Kelley, L. K.
Kennard, H. D.

PEABODY (continued).
Manoogian, B. J.
Shanahan, John
Tucker, S. C.
Varney, E. M.

PELHAM (Hampshire).

PEMBROKE (Plymouth).
(See also: Bryantville.)

PEPPERELL (Middlesex North).
Heald, C. G.
Qua, L. R.

PERU (Berkshire).

PETERSHAM (Worcester North).

PHILLIPSTON (Worcester North).

Pigeon Cove (ROCKPORT).
Baker, H. N.

PITTSFIELD (Berkshire).
Bartlett, O. L.
Blanchard, R. H.
Burton, S. C.
Colt, Henry
Currier, W. H.
Dodd, I. S. F.
Eisner, M. S.
England, A. C.
Finkelstein, Nathan
Flournoy, Thomas
Flynn, J. J.
Frawley, W. T.
Hennelly, T. P.
Howard, E. H.
Howe, J. D.
Hunt, G. P.
Kelly, W. P.
Lally, W. J.
Langlois, J. A.
†Leavitt, W. W.
Leslie, C. T.
Littlewood, Thomas
Mayberry, F. E.
Mellen, H. G.
Mercer, W. J.
Merrill, A. P.
Paddock, B. W.
†Paddock, W. L.
Richardson, C. H.
Roberts, F. A.
Roney, H. B.
Schneider, H. A.
Streeter, H. A.
Sullivan, J. A.
Sylvester, A. W.
Tate, H. J.
Taylor, E. H.
Thomes, J. B.
Tracy, W. L.
Walker, M. H., Jr.
Wilder, W. O.
Withington, A. B.
Woodruff, R. A.

PLAINFIELD (Hampshire).

PLYMOUTH (Plymouth).
Brown, W. G.
Burns, H. H.
Churchill, J. D.
†Cowles, Edward
Hill, E. D.
Hitchcock, H. R.
Prince, C. O.
Reed, L. B.

PLYMPTON (Plymouth).

PRESCOTT (Hampshire).

PRINCETON (Worcester).
Lewis, E. S.

PROVINCETOWN (Barnstable).
Birge, E. F.
Birge, W. S.
Cass, F. O.
Curley, C. P.

QUINCY (Norfolk South).
(See also: Atlantic, Norfolk Downs, West Quincy, Wollaston.)
Ahlstrom, Hjalmar
Burke, F. R.
Bushnell, E. H.
Doble, E. E.
Dolan, W. F.
Ellsworth, S. W.
Gordon, J. A.
Hardwick, S. C.
Harkins, W. J.
Hunting, N. S.
Jones, F. E.
Lynch, C. J.
McCausland, W. J.
MacLeod, J. M.
Middleton, W. J.
Reardon, B. D.
Ryder, G. H.
Sargent, W. L.
Sheahan, G. M.
Smith, E. E.

RANDOLPH (Norfolk South).
Granger, F. C.
Higgins, G. V.
Myrick, A. W.

RAYNHAM (Bristol North).

READING (Middlesex East).
Brown, W. J.
Dow, G. F.
Halligan, E. M.
Henderson, C. R.
Marsh, Albert
Richmond, E. D.
Smalley, F. L.

REHOBOTH (Bristol North).

REVERE (Suffolk).
Andrews, F. F.
Bond, W. G.
Cummings, E. F.
Monahan, E. J.
Morris, J. S.
Newton, W. C.
Silbermann, Maurice
Skirball, J. J.
Walker, William
Walsh, J. E.
Wilkins, G. A.

RICHMOND (Berkshire).

Rochdale (LEICESTER).
Leach, E. M.
†Leach, H. M.

ROCHESTER (Bristol South).

ROCKLAND (Plymouth).
Corey, F. H.
Frame, Joseph
Knight, C. E.
Osgood, Gilman.

ROCKPORT (Essex South).
(See also: Pigeon Cove.)
Cleaves, E. E.
Tupper, A. M.

Roslindale (Norfolk) (BOSTON).
(See also: Forest Hills.)
Allen, A. N.
Beede, M. J.
Behrman, R. A.
King, N. J. Q.
Lynch, D. L.
Sawyer, A. R.
Sawyer, E. LeR.
Steele, A. E.
Stevens, Seriah
Whitcombe, C. R.

ROWE (Franklin).

ROWLEY (Essex North).

Roxbury (Norfolk) (BOSTON).
Abbe, E. M.
Adams, John
Addelson, Nathan
Ascher, Joseph
Atwood, B. L.
Avedisan, A. D.
Barry, J. H.
Bartlett, W. O.
Bradley, C. S.
Brown, H. S.
Brownrigg, J. S.
Callanan, S. A.
Clement, G. W.
Cohen, M. M.
Coupal, J. F.
Coyne, T. J.
Cronin, M. J.
Cushman, G. T.
Daly, B. T.
Darling, C. B.
Davidson, K. M.
Dunbar, F. C.
Edelstein, Samuel
†Edson, P. O'M.
Emery, W. H.
Frank, Morris
Galligan, E. T.
Gavin, J. H.
Gay, W. B.
Gerstein, Maurice
Goodman, Samuel
Gray, A. M.
Gray, E. B.
Greene, T. F.
Greene, W. H.
Hall, J. B., Jr.
Hassman, D. M.
Hermann, O. J.
Hodges, A. D.
Holzman, Joseph
Horrax, Gilbert
Howard, H. B.
Howard, M. E. P.
Johnson, D. J.
Johnson, H. L.
Keeler, W. B.
Knowlton, C. D.
Konikow, M. J.
Lawrence, J. L.
Levine, S. A.
Libby, E. N.
Linenthal, Harry
Littlefield, S. H.
Lowrey, L. G.
Luftig, Jacob
Macdonald, C. W.
Macdonald, F. C.
Martin, Edward

Roxbury (continued).
Martin, J. M.
Mason, G. McC.
May, J. S.
McGurn, W. J.
McLaughlin, J. I.
McLeod, J. S.
Morrison, A. B.
Moulton, A. T.
Murphy, E. T.
Murphy, T. J.
Noyes, A. P.
O'Keefe, A. M.
Olin, Harry
Patch, W. T.
Peabody, F. W.
Pigeon, J. C. D.
Powers, E. P.
Pratt, E. A.
Prenn, Joseph
Richmond, Simon
Robins, S. A.
Rochford, G. E.
Rubin, S. H.
Salvin, L. W.
Sanborn, J. W.
Schmidt, F. S.
Schorer, C. B. J.
Scott, G. H.
Shain, A. I.
Shay, C. E.
Shay, T. M.
Sheehan, E. B.
Snow, F. S.
Sternberg, J. E.
Stetson, F. W.
Stone, G. H.
Sughrue, D. F.
Sullivan, J. L.
Taylor, F. L.
Thayer, Eugene
Towne, E. B.
Turetzky, W. L.
Wallace, John
†Wescott, W. H.
West, E. G.
White, H. W.
White, P. D.
White, W. A.
†Williams, E. T.
Winn, C. H.
Young, R. R.

Royalston (Worcester North).

Russell (Hampden).

Rutland (Worcester).
Chamberlain, W. E.
Crane, B. T.
Hampsan, N. M.
Howes, W. B.

Sagamore (Bourne).
Curry, E. F.

SALEM (Essex South).
Ahearne, C. A., Jr.
Aronson, Charles
Atwood, F. S.
Blair, G. K.
Burbeck, E. K.
Carlton, F. C.
Chisholm, L. C.
Clark, DeW. S.
Collins, F. L.
Curtis, C. L.
Donaldson, J. F.
Elliot, H. L.
Field, M. T.

SALEM (continued).
Finnegan, P. J.
Goodell, G. Z.
Gould, C. R.
Haywood, R. W.
Hennessey, W. W.
Kittredge, Thomas
LeBoeuf, A. T.
Lesses, Max
McDermott, W. V.
Mansfield, B. B.
Peirson, E. L.
Perkins, R. S.
Phippen, Hardy
Phippen, W. G.
Porier, Emile
Porier, Horace
Robbins, F. G.
Rushford, E. A.
Sargent, A. N.
Sheehan, W. J.
†Shreve, O. B.
Simpson, J. E.
Sturgis, B. F., Jr.
Towle, E. D.
Tucker, G. E.
Wilson, C. M.

Salisbury (Essex North).

Sandisfield (Berkshire).

Sandwich (Barnstable).
Beale, S. M., Jr.
Currier, C. R
Procter, T. W.

Saugus (Essex South).
(See also: Cliftondale.)
†Gale, G. W. (East)
Parcher, G. C.

Savoy (Berkshire).

Scituate (Plymouth)
(See also: Scituate Center, Scituate Harbor.)

Scituate Center (Scituate).
Handy, H. T.

Scituate Harbor (Scituate).
Alexander, T. B.

Seekonk (Bristol North).

Sharon (Norfolk).
Dole, C. F.
Gay, W. F.
Griffin, W. A.

Sheffield (Berkshire).
Wakefield, A. T.

Shelburne (Franklin).
(See also: Shelburne Falls).

Shelburne Falls (Shelburne).
†Canedy, F. J.
Guild, B. T.
Upton, C. L.

Sherborn (Middlesex South).

Shirley (Worcester North).

Shrewsbury (Worcester).
Chase, E. L.
Smith, Myrtle

Shutesbury (Franklin).
Somerset (Bristol South).
McCreery, C. C.

SOMERVILLE (Middlesex South).
(See also: West Somerville.)
Allison, C. E.
Bateman, F. E.
Bell, R. D.
Bolton, C. J.
†Booth, E. C.
Buffum, H. E.
Burt, F. L.
Carvill, A. H.
Carvill, L. M.
Caswell, B. H.
Curtis, H. F.
Dailey, E. J.
Dervin, L. J.
Durell, T. M.
Finnerty, C. W.
Hatchett, W. J.
Hodgdon, R. F.
Hughes, G. F.
Maguire, C. F.
Maguire, E. L.
McCaffrey, C. F.
McCarty, E. M.
McGann, P. P.
Meyer, E. J.
Mills, A. E.
Mongan, C. E.
Morse, F. L.
Muldoon, M. T.
Newton, E. R.
Newton, F. L. S.
Place, R. W.
Price, O. J.
Raymond, L. H.
†Sanborn, E. A.
Sawin, C. D.
Sewall, E. F.
Shanahan, T. J.
Shaw, Francis
Smith, F. G.
Stephens, F. N.
Towle, C. C.
Trueman, H. S.
Walker, H. A.
White, M. W.
Whiting, G. W. W.
Yenetchi, H. A.

Southborough (Worcester).
Jackson, A. W.

South Boston (BOSTON).
Bancroft, W. B.
Bernard, B. L.
Boland, E. S.
Buckley, P. T.
Cross, W. P.
Denning, E. J.
Denning, F. J.
Devine, W. H.
Doggett, F. F.
Fletcher, R. W.
Gallivan, W. J.
Hurley, E. D.
Jakmauh, P. J.
Keenan, H. J.
Lawlor, J. C.
Mayers, J. E.
Morris, G. P.
Morris, J. G.
Reddy, J. W.
Redmond, J. W.
†Ruddick, W. H.
Sheehan, W. J.
Sheridan, P. E. A.
Slattery, J. R.
Stuart, F. W.
Timmins, E. F.
Tracy, E. A.
Tynan, J. P.

South Braintree (BRAINTREE).
Dame, F. R.
Merriam, F. H.
Sullivan, C. A.

SOUTHBRIDGE (Worcester).
Bradford, C. C.
Cutler, M. F.
Olin, F. H.
Pagé, J. G. E.
Reed, W. G.
Waite, L. R.

South Dartmouth (DARTMOUTH).
Cushman, A. B.

South Deerfield (DEERFIELD).
Suitor, H. A.

South Dennis (DENNIS).
Davis, C. A.

SOUTH HADLEY (Hampshire).
(See also: South Hadley Falls.)
Lang, H. B.
Underhill, E. C.

South Hadley Falls (SOUTH HADLEY).
Doonan, H. E.
Leland, F. LeR.

South Hamilton (HAMILTON).
Davis, C. H.

SOUTHAMPTON (Hampshire).

South Lincoln (LINCOLN).
Blodgett, S. H.
Hart, J. S.

South Natick (NATICK).
Hills, C. E.

South Sudbury (SUDBURY).
Oviatt, G. A.

South Weymouth (WEYMOUTH).
Emerson, G. E.
Granger, K. H.
Tirrell, V. M.

SOUTHWICK (Hampden).

SPENCER (Worcester).
Austin, J. C.
Ellison, G. W.
Fowler, G. R.
Peck, A. F.

SPRINGFIELD (Hampden).
(See also: Indian Orchard.)
Adams, C. B.
Anthony, J. C.
Bacon, T. S.
Baldwin, E. E.
Bates, E. A.
Benner, R. S.
Birnie, J. M.
Blair, O. R.
Boyd, F. P.
Boyd, J. V. W.
Boyer, J. N.
Brigham, F. C.
†Brooks, L. S.
Brown, D. J.
Budington, H. F
Burke, G. H.
Byrnes, H. F.
Calkins, C. H.
Calkins, I. R.
†Calkins, Marshall

SPRINGFIELD (continued).
Camfill, R. E.
Carleton, Dudley
Carleton, Ralph
Chapin, D. L.
Chapin, L. D.
Chapin, W. A. R.
Chapin, W. H.
Chapman, C. R.
Claffy, J. McM.
†Clark, David
Cort, P. M.
Dalton, G. F.
Davidson, H. J. D.
Davis, E. L.
Deane, W. H.
DeMarco, T. A.
Dexter, F. F.
Dillon, M. J.
Dillon, W. J.
Downey, C. J.
Dubois, E. C.
Eastman, A. C.
†Edes, R. T.
Emerson, H. C.
Everett, F. L.
Finch, G. H.
Foss, G. H.
Galvin, A. H.
Gates, E. A.
Gaylord, J. F.
Gilchrist, J. M.
Godfrey, T. F.
Goodell, William
Guild, E. H.
Haltan, E. P.
Harriman, D. E.
Herrick, J. T.
Hewitt, C. E.
Hill, I. C.
Hillard, J. P.
Hirsch, H. L.
Hopkins, F. E.
Hosley, W. A.
Hubbard, G. W.
Irwin, V. J.
Judd, E. H.
Jurist, Charles
Keefe, D. E.
Kilroy, Philip
Kinloch, R. A.
Koplin, Harry
La Rochelle, F. D.
Leary, W. C.
Lewis, S. A.
Lynch, C. F.
Lynch, P. M.
†McClean, G. C.
McKechnie, F. J.
Mahoney, E. J.
Maloney, J. M.
Martin, H. C.
McGinity, J. T.
Merritt, V. S.
Moody, F. F.
Moriarty, P. M.
Mulcahy, W. E.
Myers, E. Y.
†Nims, E. B.
Ober, R. B.
Overlander, J. E.
Parmelee, W. J.
Paul, S. J.
Peck, R. H.
Quinn, J. H.
Rabinovitz, Bernard
†Rice, A. R.
Rice, A. G.
Ritter, Henry
Rochford, R. A.

SPRINGFIELD (continued).
Rumrill, S. D.
Russell, S. J.
Russell, W. B.
Ryan, S. E.
Schadt, G. L.
Schillander, C. A.
Seelye, R. H.
Seibels, R. E.
Slutskin, M. L.
Smith, H. L.
Smith, W. A.
Spaid, C. J.
Squier, A. O.
†Stebbins, G. S.
Stoddard, M. J.
Stoneman, E. A.
Street, C. E.
Streeter, J. F.
Sullivan, E. C.
Sullivan, J. C.
Sweet, F. B.
Tracy, J. M.
Van Allen, H. W.
Van Gaasbeek, G. H.
Weiser, W. R.
Weston, G. D.
Whitcomb, C. A.
White, B. P.
Wilbur, S. M.
Wilcox, H. H.
Williams, A. C.
†Woods, G. L.
Zimmerman, Henry

State Farm (BRIDGEWATER).
Baker, L. A.
Emerson, E. B.
Farrar, L. O.
Weller, J. H.

STERLING (Worcester).

STOCKBRIDGE (Berkshire).
Eaton, H. D.
Riggs, A. F.
Stockwell, H. E.

STONEHAM (Middlesex East).
Blenkhorn, James
Hersam, M. P.
Kerrigan, J. H.
Nickerson, G. W.
Park, F. E.
Sheehan, M. D.

STOUGHTON (Plymouth).
Faxon, N. W.
Faxon, W. O.

STOW (Middlesex South).

STURBRIDGE (Worcester).
(See also: Fiskdale.)

SUDBURY (Middlesex South).
(See also: South Sudbury.)

SUNDERLAND (Franklin).
Moline, Charles

SUTTON (Worcester).
(See also: Manchaug.)

SWAMPSCOTT (Essex South).
Bangs, C. H.
Bicknell, R. E.
Brown, A. A.
Godfrey, J. W.
Grimes, Loring
Jones, L. A.
Lowd, H. M.

Swansea (Bristol South).

TAUNTON (Bristol North).
(See also: East Taunton.)
Atwood, C. A.
†Bassett, E. J.
Beaulieu, F. X.
Carey, F. A.
Clark, T. F.
Crandell, A. R.
Cusick, T. F.
Dean, R. D.
†Deane, A. S.
Fox, W. Y.
Galligan, E. J.
Goss, A. V.
Hubbard, F. A.
Learoyd, C. B.
MacDonald, D. F.
McGraw, A. J.
Milot, A. F.
Murphy, E. F.
Murphy, F. A.
Murphy, J. B.
Murphy, J. L.
O'Brien, J. F.
†Paige, Nomus
†Perry, Martha
Pierce-Higgins, Eudora
Reed, B. A.
Ripley, H. G.
Robinson, T. J.
Roderick, C. E.
St. Marie, Philippe
Sayles, J. B.
White, H. A.

Templeton (Worcester North).
(See also: Baldwinsville.)
Greenwood, S. E.

Tewksbury (Middlesex North).
Coburn, H. R.
DeWolf, C. W.
Hanson, W. T.
Larrabee, H. M.
Nichols, J. H.
Peirce, G. A.
Perry, Sherman
Quennell, W. L.
Roach, A. J.

Thorndike (Palmer).
Dunphy, H. A.

Three Rivers (Palmer).
Giroux, Charles
Miller, S. O.

Tisbury (Bristol South). No P. O.
Post Office address, Vineyard Haven.
Davis, S. T.
Mayhew, O. S.

Tolland (Hampden).

Topsfield (Essex South).
Sanborn, Byron

Townsend (Worcester North).
(See also: West Townsend.)

Truro (Barnstable).

Turner's Falls (Montague).
Leary, P. F.
McGillicuddy, R. A.
Messer, C. C.

Tyngsborough (Middlesex North).
Lambert, F. De F.

Tyringham (Berkshire).

Upton (Worcester).

Uxbridge (Worcester).
Griswold, M. L.
Johnson, W. L.
Ledbury, J. W.
Little, J. T.

Waban (Brookline).
Bessey, E. E.

Waban (NEWTON).
Lothrop, O. A.
McGee, F. M.

Wakefield (Middlesex East).
Crosby, L. M.
†Dutton, Charles
Dutton, Richard
Elder, F. O.
Heath, J. W.
†Jordan, Charles
Montague, C. E.
O'Leary, J. A.
Sopher, C. L.
Tyzzer, E. E.
Woodbury, F. T.

Wales (Hampden).

Walpole (Norfolk).
(See also: East Walpole.)
Fuller, F. H.

WALTHAM (Middlesex South).
Bell, Conrad
Collins, Richard
Courtney, T. J.
Cousins, N. W.
Dascombe, O. L.
Dennen, R. W.
Desmond, C. F.
Fraim, I. W.
Fuller, C. B.
Hinchey, Richard
Holbrook, Bradbury
Hoyt, W. S.
Jarvis, W. F.
Lewis, J. P.
MacDonald, F. L.
Mackenzie, R. C.
McCormick, C. J.
Mosher, M. J.
O'Donnell, G. T.
Porter, C. T.
Stiles, F. M.
Taylor, R. A.
Willis, C. A.
Wood, H. A.
Worcester, Alfred
Young, A. R.

Waquoit (Falmouth).
Jones, L. C.

Ware (Hampshire).
Gafney, H. D.
Miner, W. W.
Pearson, M. W.
Ryan, D. M.

Wareham (Bristol South).
Morse, C. E.

Warren (Worcester).
DeLand, C. A.
†Phelps, O. W.

Warwick (Franklin).
Goldsbury, P. W.

Washington (Berkshire).

Watertown (Middlesex South).
Chase, C. O.
Creely, O. S.
†Davenport, B. F.
Higginbotham, F. A.
Kelley, E. J.
Meredith, F. L.
Meserve, E. A.
Palmer, G. M.
Robie, A. H. P.
Williamson, C. I.

Waverley (Belmont).
Abbott, E. S.
Clark, L. B.
Fernald, W. E.
Hoch, T. A.
Kewer, L. T.
Packard, F. H.
Raymond, C. S.
Tuttle, G. T.
Wallace, A. M.
Warren, L. M.
Whitney, R. L.
Woodill, E. E.

Wayland (Middlesex South).

Webster (Worcester).
Bragg, L. R.
Généreux, J. O.
Hart, G. F.
Littlefield, G. C.
Roy, J. N.
Smith, E. E.

Wellesley (Norfolk).
(See also: Wellesley Hills.)
Anthony, G. C.
Bancroft, E. A.
Gregg, Donald
Proctor, F. I.
Raymond, K. P.
†Stone, M. C.
White, L. E.

Wellesley Hills (Wellesley).
Cleveland, H. H.
Garland, F. E.
Greenwood, Allen
†Hazelton, I. H.
Hewins, P. W.
Jones, G. N.
†Macdonald, W. L.
Schofield, O. L.
Stanwood, F. A.

Wellfleet (Barnstable).
Bell, C. J.

Wendell (Franklin).

Wenham (Essex South).

Westborough (Worcester).
Ayer, T. H.
Cilley, D. P.
Clark, A. U. F.
Fuller, S. C.
Knight, C. S.
Mahoney, W. F.
Newton, R. S.
Overholser, Winfred

West Boylston (Worcester).
Trask, H. W.

WEST BRIDGEWATER (Plymouth).

WEST BROOKFIELD (Worcester).
Cowles, F. W.

West Dennis (DENNIS).
Osborne, E. S.

WESTFIELD (Hampden).
Atwater, J. B.
Brace, G. W.
Chadwick, H. D.
Chisholm, M. D.
Clark, F. T.
Cosgrove, J. J.
Davis, F. D.
Douglas, A. J.
Dutton, J. M.
Janes, G. H.
Maroney, P. J.
Marr, R. McC.
Noble, A. F.
Smith, E. S.

WESTFORD (Middlesex North).
Sherman, W. H.
Wells, O. V.

WESTHAMPTON (Hampshire).

West Harwich (HARWICH).
Nickerson, J. P.

West Medford (MEDFORD).
Bean, C. F. K.
Drake, R. A.
Killam, F. H.
Wilkins, S. H.

West Medway (MEDWAY).
Butler, Samuel
Quint, N. P.

WESTMINSTER (Worcester North).
Kelley, C. M.
Mossman, George

WEST NEWBURY (Essex North).
Orcutt, W. L.

West Newton (NEWTON).
Atkinson, L. D. R.
Chandler, Harold B.
Chandler, Henry B.
Fisher, I. J.
Jack, L. H.
Knowles, W. F.
Lowe, F. M.
Macomber, Donald
Nielsen, E. B.
Paine, N. E.
Sherman, F. M.
Wells, D. W.

WESTON (Middlesex South).
Albee, K. T.
Robbins, Chandler
Van Nüys, Fresenius

WESTPORT (Bristol South).
Burt, E. W.

West Quincy (QUINCY).
Ash, J. H.
Dion, T. J.

West Roxbury (Roxbury) (BOSTON).
Gorham, G. H.
Hamilton, B. E.
Howell, W. W.
Jillson, F. C.
Knight, C. L.
Knudson, M. M.
Lougee, J. L.

West Roxbury (continued).
Reagh, A. L.
Sedgley, F. R.
Shadman, A. J.
Stevens, H. B.
Stevens, S. E.
Watters, W. H.

West Somerville (SOMERVILLE).
Ayres, H. W.
Blake, A. H.
Bond, W. L.
Bryant, G. W.
Cholerton, Herbert
Gillis, J. E.
Hoole, J. E.
Liverpool, C. H.
McLean, J. A.
Mahoney, G. C.
†Makechnie, H. P.
Miles, G. A.
Osgood, G. E.
Pillsbury, E. D.
Pote, L. H.
Richardson, C. A. C.
Ruston, W. D.
Sylvester, N. R.
Wagner, E. J.
Whitcher, B. R.

WEST SPRINGFIELD (Hampden).
(See also: Mittineague.)
Bostick, W. J.
Corcoran, G. B.
Steele, G. L.

WEST STOCKBRIDGE (Berkshire).
Leonard, Z. L.

WEST TISBURY (Bristol South).

West Townsend (TOWNSEND).
Ely, R. S.

WESTWOOD (Norfolk).

WEYMOUTH (Norfolk South).
(See also: East, North and South Weymouth.)
Chase, Joseph, Jr.
Jacoby, Rudolph
Pease, L. W.

WHATELY (Franklin).

Whitinsville (NORTHBRIDGE).
Balmer, W. E.
Barry, E. W.
Harriman, C. H.

WHITMAN (Plymouth).
Beaulieu, E. J.
†Copeland, H. F.
Dyer, E. A.
Fobes, H. E.
Hanley, F. J.
Lovell, C. E.
MacKeen, A. A.
Pulsifer, W. H.
Rood, A. D.

WILBRAHAM (Hampden).
(See also: North Wilbraham.)

WILLIAMSBURG (Hampshire).
(See also: Haydenville.)
Hayes, J. G.

WILLIAMSTOWN (Berkshire).
(See also: Blackinton.)
Adriance, Vanderpoel
Howard, F. H.

WILLIAMSTOWN (continued).
†Mather, E. E.
McWilliams, N. B.

WILLIMANSETT (CHICOPEE).
Mead, F. A.

WILMINGTON (Middlesex East).
Buck, W. E.
Buzzell, D. T.

WINCHENDON (Worcester North).
Henry, J. G.
Holzer, W. F.
Kenney, C. B.
Kenney, W. C.
Pelletier, A. G.
Sullivan, M. G.

WINCHESTER (Middlesex East).
Aimone, V. A.
Allen, C. J.
Brown, A. L.
Cummings, M. A.
Cutter, I. T.
Dennett, D. C.
Gale, H. A.
Hammond, Philip
Hersey, H. W.
†Hildreth, J. L.
Lowell, W. H.
McCarthy, C. F.
Mead, G. N. P.
Ordway, C. E.
Putnam, Ralph
Simon, H. F.
Tozier, C. H.

WINDSOR (Berkshire).

WINTHROP (Suffolk).
French, G. H.
Grainger, E. J.
Halsall, M. E.
Johnson, O. E.
Metcalf, B. H.
Morse, F. H.
Parker, R. B.
Soule, H. J.
White, L. N.

WOBURN (Middlesex East).
Bixby, J. P.
Blake, H. G.
Carroll, J. P.
Caulfield, T. E.
Chalmers, Robert
Conlin, R. E.
Hutchings, J. H.
Keleher, W. H.
Lane, C. G.
McCormick, J. J.
O'Brien, C. T.
Stewart, V. C.
Tedford, A. H.
West, F. O.

Wollaston (QUINCY).
Adams, C. S.
Champion, M. E.
Curtis, W. G.
Funnell, W. G.
King, G. E.
Phipps, W. A.

WORCESTER (Worcester).
Adamian, P. A.
Adams, G. E.
Albee, G. M.
Andrews, B. F.
Arey, H. C.
Arey, J. M.

WORCESTER (continued).
Atwood, A. W.
Auger, L. L.
Ayers, C. E.
Baff, Max
Baker, F. H.
Balcom, K. I.
Barnes, J. A.
Barrell, M. E.
Beal, H. W.
Bergin, S. A.
Berry, Gordon
†Berry, J. C.
Bieberbach, W. D.
Bigelow, E. B.
Bowers, G. F. H.
Brennan, J. J.
Brown, G. C.
Bryant, Frederick
Bunker, S. M.
Burley, B. T.
Butler, F. J.
Butterfield, G. K.
Byrne, C. J.
Cahill, J. W.
Carney, P. J.
Cassels, L. R.
Charteris, M. A.
Clark, W. I., Jr.
Colberg, P. A.
Cook, P. H.
Cottle, L. R.
Croissant, C. A.
Cronin, T. J.
Cross, A. E.
Cummings, J. J.
Curran, J. F.
Currie, I. M.
Cutler, R. W.
Daudelin, S. A.
Deering, G. E.
Delahanty, W. J.
Denning, W. E.
Disbrow, E. P.
Dix, G. A.
Dixon, Arthur
Dolan, W. E.
Donoghue, J. J.
Donohue, J. J.
Doray, F. L.
Drew, C. A.
Ducharme, A. N.
Duggan, J. T.
Easter, E. F.
Elkind, H. B.
Emerson, B. K.
Emery, G. E.
Estabrook, C. T.
Everett, O. H.
Fallon, M. F.
Farnham, J. M. W.
Fay, F. G.
Fitzgerald, C. P.
Flynn, J. J.
Fogerty, W. C.
Foley, T. J.

WORCESTER (continued).
Fox, M. B.
Gage, Homer
George, F. W.
Getchell, A. C.
Gibby, H. J.
Gilfillan, D. R.
Gilman, W. R.
Grant, W. M.
Greene, R. W.
Gwynne, S. C.
Haigh, G. W.
Halloran, M. J.
Harkins, J. F.
Harower, David
Hartnett, J. H.
Haviland, W. C.
Hill, G. H.
Holmes, M. S.
Horsman, H. L.
Hunt, E. L.
†Jordan, G. A.
Kenney, T. F.
Kenyon, H. J. K.
Kinnicutt, Roger
Lazarus, Louis
Lemaire, W. W.
Lincoln, G. C.
Lincoln, Merrick
Lindsay, J. C.
Lindsay, J. I.
Lindsay, M. S.
Lovell, D. B.
Lussier, C. A.
Lynch, W. F.
McClusky, H. L.
MacFadyen, J. A.
MacIver, G. A.
MacKay, W. H.
MacKerrow, H. G.
Magune, F. L.
†Marble, J. O.
Marsh, A. W.
Masten, C. H.
Mason, B. H.
Mathews, R. F.
McDonald, J. W.
McEvoy, T. E.
McGillicuddy, J. T.
McKibben, W. W.
McKoan, J. W.
McSheehy, T. C.
Miller, L. C.
Murphy, A. F.
Nightingale, James
O'Callaghan, M. V.
O'Connell, A. E.
O'Connor, D. F.
O'Connor, J. F.
O'Connor, J. W.
O'Day, G. F.
O'Meara, M. J.
Osborne, C. A.
Overlock, M. G.
Paglia, J. J., Jr.
Parker, E. L.

WORCESTER (continued).
Peterson, H. O.
Phelps, O. D.
Pofcher, E. H.
Power, G. A.
†Quinby, H. M.
Randall, C. W.
Rice, J. E.
Robinson, Solomon
Rochette, E. C.
Rockwell, A. E. P.
Rockwell, L. W.
Rose, W. H.
Schofield, R. W.
Scribner, E. V.
Seelye, W. C.
Shannahan, R. J.
Shattuck, A. M.
Shaw, T. B.
Shea, P. O.
Simmons, E. B.
Simmons, H. C.
Smith, L. R.
Sparrow, C. A.
Stansfield, O. H.
Stapleton, R. H.
Stevens, C. B.
Stowell, F. E.
Swan, R. W.
Swasey, Edward
Talbot, J. E.
Taylor, James, Jr.
Thom, D. A.
Thompson, H. E.
Tripp, G. A.
Trowbridge, E. H.
Voorhis, Kathalyn
Ward, G. O.
Ward, R. J.
Watkins, R. P.
Watt, George
Wetherbee, L. E.
Wheeler, C. D.
Wheeler, Leonard
Whitaker, C. W.
White, Levi
Williams, F. R.
Woodward, L. F.
Woodward, S. B.
†Workman, W. H.
Yoosuf, A. K.

WORTHINGTON (Hampshire)
Lyman, W. R.

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Ferguson, E. H.
Kable, J. D.
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Perkins, F. H.
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Proctor, T. M.
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(See also: Yarmouth Port.)

Yarmouth Port (YARMOUTH).
Hart, H. B.

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1917

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Dwight, H. L., Copperopolis.
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Bates, L. B., Ancon.

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Bauer, L. H.
Newton, R. W.
Wood, Leonard.

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Street, L. A. B., Shanghai, China.
Townsend, David, River Glade, N. B.

Address Unknown.
†Brown, Marshall Lebanon.

NUMERICAL SUMMARY OF FELLOWS BY DISTRICTS

GIVING CITIES AND TOWNS

[Names of Cities are printed in Capitals.]

1917

BARNSTABLE DISTRICT.

Established 28 May, 1840.

Barnstable	8	Orleans	1
Bourne	1	Provincetown	4
Brewster	1	Sandwich	3
Chatham	1	Truro	
Dennis	3	Wellfleet	1
Eastham		Yarmouth	1
Falmouth	3		
Harwich	3	Total	30
Mashpee			

Active 29. Retired 1.

BERKSHIRE DISTRICT.

Established 7 Oct., 1807.

Adams	4	NORTH ADAMS	11
Alford		Otis	
Becket	1	Peru	
Cheshire		PITTSFIELD	53
Clarksburg		Richmond	
Dalton	3	Sandisfield	
Egremont		Savoy	
Florida		Sheffield	1
Great Barrington	6	Stockbridge	3
Hancock		Tyringham	
Hinsdale		Washington	
Lanesborough	2	West Stockbridge	1
Lee	2	Williamstown	5
Lenox	2	Windsor	
Monterey			
Mount Washington		Total	94
New Marlborough			

Active 90. Retired 4.

BRISTOL NORTH DISTRICT.

Established 31 May, 1849

Attleborough	14	Norton	1
Dighton	1	Raynham	
Easton	2	Rehoboth	
Freetown	1	Seekonk	
Lakeville*	1	TAUNTON	32
Mansfield	4		
Middleborough*	5	Total	65
North Attleborough	4		

Active 60. Retired 5.

BRISTOL SOUTH DISTRICT.

Established 3 April, 1839.

Acushnet		NEW BEDFORD	67
Chilmark		Oak Bluffs	
Dartmouth	1	Rochester	
Edgartown	1	Somerset*	1
Fairhaven	1	Swansea*	
FALL RIVER	61	Tisbury	2
Gay Head		Wareham	1
Gosnold		Westport	1
Marion	2	West Tisbury	
Mattapoisett	2		
Nantucket	2	Total	142

Active 138. Retired 4.

ESSEX NORTH DISTRICT.

Established 6 Oct., 1841.

Amesbury	8	Newbury	
Andover	7	NEWBURYPORT	14
Boxford		North Andover	2
Georgetown	4	Rowley	
Groveland	1	Salisbury	
HAVERHILL	54	West Newbury	1
LAWRENCE	67		
Merrimac	1	Total	169
Methuen	10		

Active 167. Retired 2.

ESSEX SOUTH DISTRICT.

Established 7 June, 1804.

BEVERLY	18	Nahant	1
Danvers	16	Peabody	11
Essex	1	Rockport	3
GLOUCESTER	19	SALEM	39
Hamilton	2	Saugus	7
Ipswich	3	Swampscott	7
LYNN	95	Topsfield	1
Lynnfield	1	Wenham	
Manchester	2		
Marblehead	7	Total	234
Middleton	1		

Active 228. Retired 6.

FRANKLIN DISTRICT.

Established 27 May, 1851.

Ashfield	1	Monroe	
Bernardston	2	Montague	4
Buckland		New Salem	
Charlemont		Northfield	3
Colrain	2	Orange	4
Conway		Rowe	
Deerfield	2	Shelburne	3
Erving	1	Shutesbury	
Gill		Sunderland	1
Greenfield	14	Warwick	1
Hawley		Wendell	
Heath		Whateley	
Leverett			
Leyden		Total	38

Active 37. Retired 1.

HAMPDEN DISTRICT.

Established 28 May, 1840.

Agawam	1	Montgomery	
Blandford		Palmer	10
Brimfield	1	Russell	
Chester	1	Southwick	
CHICOPEE	8	SPRINGFIELD	138
Granville	1	Tolland	
Hampden		Wales	
Holland		Westfield	14
HOLYOKE	49	West Springfield	4
Longmeadow	1	Wilbraham	1
Ludlow	1		
Monson	2	Total	232

Active 221. Retired 11.

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* By vote of the Council, June 7, 1910, Somerset and Swansea were transferred to Bristol South, and Lakeville and Middleborough to Bristol North.

HAMPSHIRE DISTRICT.

Established 5 Oct., 1831.

Amherst	6	NORTHAMPTON	29
Belchertown	1	Pelham	
Chesterfield		Plainfield	
Cummington	1	Prescott	
Easthampton	6	Southampton	
Enfield	1	South Hadley	4
Goshen		Ware	4
Granby		Westhampton	
Greenwich		Williamsburg	3
Hadley	2	Worthington	1
Hatfield	3		
Huntington	1	Total	62
Middlefield			

Active 59. Retired 3.

MIDDLESEX EAST DISTRICT.

Established 2 Oct., 1850.

Burlington		Wilmington	2
MELROSE	17	Winchester	17
North Reading	3	WOBURN	14
Reading	7		
Stoneham	6	Total	77
Wakefield	11		

Active 73. Retired 4.

MIDDLESEX NORTH DISTRICT.

Established 2 Oct., 1844.

Acton		Groton	1
Bedford	2	Littleton	
Billerica	4	LOWELL	86
Boxborough		Pepperell	2
Carlisle		Tewksbury	9
Chelmsford	3	Tyngsborough	1
Dracut		Westford	2
Dunstable			
		Total	110

Active 105. Retired 5.

MIDDLESEX SOUTH DISTRICT.

Established 2 Oct., 1850.

Arlington	14	MARLBOROUGH	8
Ashland	1	Maynard	2
Belmont	15	MEDFORD	15
Brighton*	28	Natick	9
CAMBRIDGE	127	NEWTON	65
Charlestown*	18	Sherborn	
Concord	8	SOMERVILLE	66
EVERETT	18	Stow	
Framingham	20	Sudbury	1
Holliston		WALTHAM	26
Hopkinton	1	Watertown	10
Hudson	2	Wayland	
Lexington	6	Weston	3
Lincoln	4		
MALDEN	38	Total	502

* A part of Boston.

Active 486. Retired 16.

NORFOLK DISTRICT.

Established 2 Oct., 1850.

Bellingham		Milton	12
Brookline	114	Needham	6
Canton	7	Norfolk	1
Dedham	7	Norwood	9
Dorchester*	120	Roslindale*	11
Dover	1	Roxbury*	108
Foxborough	5	Sharon	3
Franklin	2	Walpole	2
Hyde Park*	8	Wellesley	16
Jamaica Plain*	42	West Roxbury*	13
Mattapan*	16	Wrentham	7
Medfield	3		
Medway	3	Total	517
Millis	1		

Active 503. Retired 14.

NORFOLK SOUTH DISTRICT.

Established 1 Oct., 1884.

Braintree	9	QUINCY	33
Cohasset	3	Randolph	3
Hingham	6	Weymouth	11
Holbrook	3		
Hull	2	Total	70

Active 70.

PLYMOUTH DISTRICT.

Established 2 Oct., 1850.

Abington	6	Pembroke	1
Avon	1	Plymouth	8
Bridgewater	11	Plympton	
BROCKTON	55	Rockland	4
Carver		Scituate	2
Duxbury	3	Stoughton	2
Halifax		West Bridgewater	
Hanover	2	Whitman	9
Hanson			
Kingston	1	Total	108
Marshfield	3		
Norwell			

Active 100. Retired 8.

SUFFOLK DISTRICT.

Established 7 June, 1804.

BOSTON*	660	Winthrop	9
CHELSEA	13		
Revere	11	Total	693

Active 677. Retired 16.

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* Except Brighton and Charlestown, which are in the Middlesex South District, and Dorchester, Hyde Park, Jamaica Plain, Mattapan, Roslindale, Roxbury, West Roxbury, and that part of Boston lying south of a line beginning at Dorchester Bay opposite end of Preble Street, and running in a general north-easterly direction through the middle of Preble and Swett (now Southampton) Streets to Northampton Street, then by the middle of Northampton Street to Washington Street, then by the middle of Washington Street to Camden Street, then by the middle of Camden and Gainsborough Streets to Huntington Avenue, then by the middle of Huntington Avenue to the Huntington Avenue entrance of the Back Bay Park, then across the Park westerly to the waterway known as Muddy Brook, then by Muddy Brook to St. Mary's Street, then by the middle of St. Mary's Street to the Charles River, which are in the Norfolk District.

WORCESTER DISTRICT.

Established 7 June, 1804.

Auburn	
Barre	2
Berlin	
Blackstone	1
Bolton	
Boylston	
Brookfield	2
Charlton	
Clinton	12
Dana	1
Douglas	1
Dudley	
Grafton	6
Hardwick	
Harvard	1
Holden	2
Hopedale	
Hubbardston	1
Lancaster	1
Leicester	3
Mendon	
Milford	4
Millbury	3
New Braintree	
Northborough	2
Northbridge	3
North Brookfield	1
Oakham	
Oxford	3
Paxton	
Princeton	1
Rutland	4
Shrewsbury	2
Southborough	1
Southbridge	6
Spencer	4
Sterling	1
Sturbridge	1
Sutton	1
Upton	
Uxbridge	4
Warren	2
Webster	6
Westborough	8
West Boylston	
West Brookfield	1
WORCESTER	186
Total	276

Active 267. Retired 9.

WORCESTER NORTH DISTRICT.

Established 25 May, 1858.

Ashburnham	2
Ashby	1
Athol	4
Ayer	3
FITCHBURG	34
Gardner	15
LEOMINSTER	10
Lunenburg	1
Petersham	
Phillipston	
Royalston	
Shirley	
Templeton	4
Townsend	1
Westminster	2
Winchendon	6
Total	83

Active 82. Retired 1.

STANDING COMMITTEES.

For 1917-1918.

Of Arrangements.—J. H. Young, J. L. Huntington, R. H. Miller, C. H. Lawrence, Jr., Donald Macomber, A. W. Reggio.

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RECAPITULATION.

District Societies.	Retired	Active	Total
Barnstable		29	30
Berkshire	4	90	94
Bristol North	5	60	65
Bristol South	4	138	142
Essex North	2	167	169
Essex South	6	228	234
Franklin	1	37	38
Hampden	11	221	232
Hampshire	3	59	62
Middlesex East	4	73	77
Middlesex North	5	105	110
Middlesex South	16	486	502
Norfolk	14	502	516
Norfolk South		70	70
Plymouth	8	100	108
Suffolk	16	677	693
Worcester	9	267	276
Worcester North	1	82	83
Fellows resident in Massachusetts	110	3391	3501
Fellows resident in other States and Countries	8	181	189
	118	3572	3690
Fellows, addresses unknown	1		1
Whole number of Fellows in the Society, Jan. 1, 1917.	119	3572	3691

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The Boston Medical and Surgical Journal

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Address.

THE VENEREAL DISEASE PROBLEM IN MASSACHUSETTS.*

BY MERRILL E. CHAMPION, M.D., C.P.H., BOSTON,
State District Health Officer.

IT is the duty of municipal health departments to use all means within their power to cut down the death rate and to lessen the morbidity from preventable disease. It is the duty of the state health departments to point out the best ways of doing these things; to coördinate the efforts of the individual municipalities; and to employ all reasonable educational methods to impress the importance of hygiene upon the citizens of the State. It is in this spirit that the State Department of Health of Massachusetts has inaugurated a campaign against venereal disease.

I need hardly dilate upon the importance of the problem with which we are dealing. War conditions have dashed out of the eyes of thinking people the sandy accumulations of years of dodging, ostrich-like, an issue which has become progressively more menacing. The prospect is not one to cause rejoicing. We see men incapacitated from doing their duty to their communities as decent citizens; we see women condemned to lives of suffering and sterility; and, worst of all, we see children blind, defective, tainted with a taint not of their own seeking but handed down to them by those whose duty it was to protect them. We see insane hospitals filled with paretics as the result of syphilis, and entailing enormous expenditures upon the Commonwealth. Indeed, so widespread is venereal disease that there is good reason to believe that at least 5% of the population of our own State is infected with syphilis in one form or another. Add to this the figures obtained from European sources since the world-war began, and we can readily see that for economic and patriotic reasons, if for no others, we must take an aggressive stand.

The aims of the State Department of Health in the venereal disease campaign may be said to be fourfold: to prevent the suffering and economic loss due to the disabling effects of venereal disease; to help reduce the mortality among infants and children due to this cause; to lower the general death rate; and to prevent blindness due to venereal infection. It plans to accomplish these ends by educational measures; by furnishing free a drug for the treatment of syphilis, thus rendering the patient non-infective; by repressive measures directed against the incorrigible carriers of the disease; and by methods of reporting.

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* Delivered before the Norfolk District Medical Society, February 26, 1918.

Of the above-mentioned measures, the simplest to inaugurate is, of course, reporting. It is one thing, however, to make a disease reportable and quite another to get it adequately reported. For this we have to rely upon the conscientiousness and good faith of the practising physician. In this State syphilis and gonorrhea have been declared diseases dangerous to the public health, reportable to the State Department of Health directly, under authority of Chapter 670 of the Laws of 1913. This action of the State Department of Health went into effect February 1, 1918. Because of unavoidable delay in printing, the reporting blanks are just now getting into the hands of the physicians. A brief résumé of the essentials of the regulations regarding reporting may be in order here.

All patients suffering from gonorrhea or syphilis in the infectious stage are to be reported by serial number at the time of consultation with a physician unless they exhibit a numbered circular which shows that they have already been reported. If the patient remains with his physician until a cure is effected no further action is called for. If, however, the first physician is abandoned for a second one, the latter is expected to notify the previous attendant that he has the patient. No further notification than this is required if the patient remains with this second choice until cured. On the other hand, if the patient leaving his original physician before a cure is effected, does not go to another or neglects to show his serial number to any subsequent physician he may consult, the physician originally in charge of the case must, at the expiration of six weeks without word of his patient, report the patient's name, address and serial number to the State Department of Health, which in turn will notify the local health department, in order that proper measures of surveillance may be instituted. Thus it will be seen that secrecy as to name and address depends entirely on the patient himself.

As I have already said, in the matter of reporting, success is dependent upon the hearty coöperation of the practising physician. The State Department of Health, on the other hand, expects to go far in the matter of rendering syphilis non-infective through its distribution of arsphenamine, which is a satisfactory substitute for salvarsan, and which is produced by the Department itself. To aid in the control of all forms of venereal disease and to insure adequate distribution of arsphenamine, the State Department of Health is arranging for some sixteen "State approved" venereal clinics throughout the Commonwealth. These will be under local management; will furnish treatment to those who need it; will, we hope, serve as educational centers; and will distribute arsphenamine to practitioners qualified to administer it. As we all know, it requires skill and the necessary apparatus to administer a drug like salvarsan, Moreover, a more fundamental requirement still is skill in diagnosis. For this reason it is highly desirable that in as many instances as possible the diagnosis of syphilis be made and the treatment administered by experts such as are more likely to be found in the larger hospital centers. It is greatly to be desired that the family physician make use of these "State approved" clinics for those of his patients who cannot afford the services of a specialist. It is only by the closest coöperation of all who have the public health at heart that headway can be made against the venereal evil. A noteworthy step along the line of coöperation was recently taken at a meeting of many of the Wassermann workers of the State with the State Department of Health. A uniform system of reporting was agreed upon and measures were taken which will minimize to a great extent in the future, the possibilities of discrepancies in the results obtained in different laboratories. It is of interest to know that about thirty thousand specimens were examined last year in the State Wassermann Laboratory alone.

A further point, and an important one in connection with coöperation in the treatment of venereal diseases, deserves mention. We all know the evils of "counter prescribing" by drug stores. Deprecated by the better class of druggists, it is none the less practised to a very great extent by the less scrupulous men. The State Department of Health now has a bill before the Legislature relative to the prescribing and compounding of certain drugs. This bill would make it unlawful for any person other than a duly registered physician to prescribe or recommend to any person medicines for the treatment of venereal disease, or to compound any medicine for this purpose from any written or printed formula unless signed and dated by a registered physician. I am glad to say that representatives of the Massachusetts State Pharmaceutical Association have expressed themselves as in favor of this bill.

Another bill whose provisions will render easier the task of the physician provides that all venereal disease records shall be held confidential. An exception is made, however, to the extent that "nothing in this act shall be construed to prevent any legally qualified practitioner of medicine within the Commonwealth, who has definite knowledge of venereal infection of any individual obtained through professional channels from warning the parents or guardians of any minor, or the individual himself or herself if of legal age, from whom such venereally infected individual has obtained promise of marriage while concealing his or her disability from venereal disease. Any such warning or advice given in good faith by any physician shall be deemed and construed to be a privileged communication and shall not constitute a slander or libel."

Quite apart from the problem of venereal disease as it occurs in the average patient of the average doctor is that of infection of those who do not seek treatment at all or who go to quacks. Many of these cases are found, of course, among prostitutes and other victims of loose living. As a measure of protection of the public health, we must provide facilities for treatment of those who do not voluntarily seek treatment. A bill is now pending before the Legislature which calls for a physical examination of all persons committed to a penal institution for thirty days or more. Treatment can then be carried on as they serve out their sentences. Furthermore, it can probably be worked out through coöperation with the courts that dispensary treatment be enforced by the use of the probation system. Adequate institutional care will have to be provided for those who through mental defect easily become victims of the social evil. Lastly, there is urgent and immediate need of hospital beds for venereal cases. In the past, moral considerations have caused hospitals to discriminate against this class of case; thinking people must now realize that the principles of preventive medicine are as necessary in dealing with syphilis as in dealing with diphtheria.

I have briefly outlined some of the various steps in the program which the State Department of Health expects to follow. I have not spoken, however, of the most important one of all. Hand in hand with measures for reporting, for treatment, for repression, must go a widespread effort directed towards the education of the average citizen as to the need of all these measures. He must be shown the reality of the menace and yet must be reassured as to the care and tact which will have to be exercised in following up cases where so many social and family relationships are involved. The physician can be of the utmost assistance to the health authorities in this educational campaign. It is imperative, also, that newspaper editors break the impenetrable silence of the past regarding venereal disease. Some are already lending their assistance through editorials and through full reports of talks on venereal diseases given by qualified persons. The majority of newspapers, nevertheless, are as yet afraid to speak out. Much valuable assistance is being lent by the clergy; we need still more. Useful educational work among the men of our Army and Navy is now in progress; in this the State Department of Health is taking its share at the request of the national authorities.

Original Articles.

HEMORRHAGE FROM THE UTERUS IN THE NON-PREGNANT WOMAN.*

By Frank A. Pemberton, M.D., Boston.

This is a pleasant subject to speak on, for the discovery of the cause of the trouble and its correct treatment are possible because the different pathological possibilities are, for the most part, well catalogued and a satisfactory method of treatment has been worked out for each one.

This bleeding comes under two heads,—menorrhagia and metrorrhagia. Menorrhagia is an excessive menstrual flow, and may occur as an increased amount of flow during a normal time, a prolongation of the period of flow, an increase in the frequency of recurrence, or any combination of these. The determination of the existence of menorrhagia depends, therefore, on the comparison of the present length and amount of flow with that which is normal to the patient, and is simply a relative term for each individual. As a general rule, the formation of clots means an excessive flow.

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* Read before the Norfolk South District Medical Society, December 6, 1917.

Metrorrhagia is uterine bleeding occurring independently of menstruation, that is, between the periods, and is always a symptom of a pathological condition.

The causes of these two forms are frequently the same, so that we can most intelligently consider them together.

The causes of pathological bleeding may be divided into pelvic and extrapelvic. We are more concerned with the former, but perhaps it would be interesting to say a few words about the latter, first. Such bleeding is seen occasionally in the acute infectious diseases, especially influenza, nephritis, chronic passive congestion from cardiac disease, arteriosclerosis; though it is an unsolved question as to whether the high blood pressure or change in the uterine blood vessels is the cause, and diseases of the blood, such as anemia, except chlorosis, in which the flow is diminished, myelogenous leukemia, and purpura. The flowing is rarely serious and amounts to little in the long run; but serious cases are seen, as, for instance, one cited by J. T. Williams, in a case of nephritis, where the amount of blood lost menaced the patient's life. The important point to remember is that it should not be taken for granted that the disease afflicting the patient is the cause of the bleeding, but a pelvic cause should be searched for to prevent future trouble.

The pelvic causes are many; almost every gynecological condition may show pathological bleeding at some stage. Some may cause both menorrhagia and metrorrhagia, but most are confined to one or the other. It seems to me that it would be more serviceable to take them up, so far as possible, in relation to the age at which they most commonly occur.

Before puberty bleeding from the vagina in the form of a bloody discharge, may be due to a rare form of sarcoma of the cervix, of which few cases have been reported. The disease takes the form of grape-like polyps, extends rapidly and can, of course, be cured only by means of early diagnosis and operation. Always think of it and take steps to make sure.

In the first decade after puberty, the most common form of bleeding is a profuse menorrhagia where no pathological cause can be found. The patient bleeds over a longer time and more profusely than the normal amount, occasionally endangering her life and usually becoming weak and physically useless. Examination of specimens removed at operations in such cases has resulted in several theories as to the cause. The uterus is usually smaller than normal and was thought to be undeveloped and therefore unable to contract on the blood vessels to control bleeding, but many girls who do not bleed abnormally have similar uteri. An excess of connective tissue in the uterine wall and so-called cystic ovaries have also been advanced as theories, but the same conditions hold true as regards the uterus. Careful histological examination, in many cases, and comparison of the findings with the histories of the patients, has resulted in the belief that excessive uterine bleeding seems to have no relation to the amount of connective tissue in the uterine wall, to changes in the endometrium, except growths, or to changes in the ovaries, except growths. That the ovaries cause menstruation by manufacturing an internal secretion, that removal of them stops this particular form of bleeding, and that x-ray and radium treatment, both of which act on the ovary,—about which more will be said later,—control these cases, make it seem probable that in these patients we are dealing with an excessive production of the internal secretion of the ovary, which results in increased bleeding. It is called, descriptively, uterine insufficiency.

Two occasional causes seen at this stage of life are cervical polyps and erosion of the cervix. The polyps cause menorrhagia, if large, but are more frequently noticed by causing metrorrhagia, or a bloody discharge, due to necrosis. The erosion is one we see quite often in virgins, and consists of a circular, reddened, easily bleeding area around the external os, easily recognized on inspection, which makes a bloody discharge.

During the period of sexual maturity, many and various causes are met with, which have to be considered in arriving at a diagnosis. First, following pregnancy, which may have terminated in normal labor or miscarriage, abnormal bleeding results from retained placenta, chorio-epithelioma, and puerperal sepsis. The bleeding from the first is irregular, stopping for a few days at a time only, not profuse as a rule, though this depends on the amount of placenta retained and continues until the placenta is cast off or removed. If retained for weeks, the placenta becomes organized into connective tissue, forming a so-called placental polyp which keeps up the flow, though not as profusely as at first. Chorio-epithelioma, on the other hand, is characterized by a sudden onset of hemorrhage, lasting only a short time, but occurring repeatedly because the tumor erodes the walls of blood vessels from time to time as it grows. Chorio-epithelioma grows from the cells covering the chorionic villi of the placenta, the Langhans' layer and the syncytium. These lie in the blood spaces between the uterus and the placenta so that metastases take place readily through the veins of the uterus which open into these blood spaces to near or distant parts of the body. It grows rapidly because it consists of fetal tissue, which normally has a rapid rate of growth, and lies in the ideal culture medium, blood. So it is easily understood that early diagnosis is of the utmost importance if the patient is to be cured. Bleeding in puerperal sepsis means that either there is retained placenta or an acute salpingitis with pelvic congestion and flowing from that cause. It is believed that retained infected placenta keeps up an endometritis by acting as a focus from which infection spreads, for as soon as the placenta is removed, the endometritis clears up and the bleeding stops.

As regards the inflammatory diseases of the pelvis, in acute salpingitis we find both menorrhagia and metrorrhagia, not, as a rule, serious in amount and clearing up as the disease gets well. In the chronic stage, where the uterus is retroverted and held down by adhesions, we sometimes find menorrhagia, due to chronic passive congestion. Tuberculosis of the tubes causes amenorrhea, but if the disease attacks the endometrium, as it does if let go long enough, in about two-thirds of the cases, a watery, bloody discharge occurs. Such a discharge, after a period of amenorrhea with pelvic pain, in a young woman, should always suggest tuberculosis. It is due to ulceration of the endometrium.

Mucous polyps are a frequent cause of menorrhagia and of metrorrhagia when they become necrotic. They grow from the endometrium as well as from the cervical mucous membrane and increase in frequency towards fifty years of age. Always remember that both types may be present in the same case, the endometrial ones being inside out of sight, so that in every such case the uterus should be curetted carefully. The cervical polyps are frequently multiple in number. They rarely cause serious bleeding.

Fibroids are another frequent cause of menorrhagia, but only so when they are submucous, necrotic, undergoing malignant degeneration, or cause a retroversion with the resulting passive congestion. You have all seen large fibroids causing pressure symptoms, which do not cause excessive flowing. The bleeding is supposed to come from dilated vessels in the endometrium bordering on the tumor rather than from the endometrium covering it. It is important to remember that a submucous fibroid, not large enough to be palpable on bimanual examination, can cause pathological bleeding. Such fibroids can be diagnosed only on ether examination. When a submucous fibroid becomes pedunculated, a so-called myomatous polyp, it may easily become necrotic, and then causes metrorrhagia.

Some patients with retroversion and prolapse of the uterus are afflicted with menorrhagia. Such cases show edema of the uterus, congestion of the blood vessels and varicose veins in the broad ligaments, from which findings the conclusion is drawn that the bleeding is due to passive congestion and loss of contractile power of the uterine musculature. Most of them are relieved by a suspension, but some are not, probably because the uterus does not regain its normal tone again.

Non-malignant tumors of the ovaries cause no trouble as regards this subject unless they have a pedicle which becomes twisted, and then the patient may flow for a few hours, though not seriously. Why that should cause flowing, we do not know. Malignant tumors of the ovaries, on the other hand, frequently do cause irregular flowing and profuse menstruation; why, is not certain.

Towards the climacteric we find two forms of flowing which are quite common. Both are characterized by menorrhagia. In one, the only pathological finding is a large uterus, said to have more connective tissue in it than normal, as a result of child-bearing, and frequently, arteriosclerotic blood vessels. The bleeding has been laid to loss of tone in the muscle and rupture of the blood-vessels, but here we meet again with a contradiction similar to that in girls, that is, that many women have similar uteri with no bleeding. Therefore, this also is laid to an excessive amount of internal secretion of the ovary with the resultant bleeding. It seems possible, from a theoretic view, however, that the amount of secretion is the same, but that the uterus has lost its resistance to the secretion, or that its threshold value of resistance is lowered. Anyway, very profuse flowing may occur with no definite pathological cause.

The other type shows a hypertrophy of the endometrium, it being thrown into folds and polypi, frequently a centimeter thick, and containing glands so dilated with secretion that they can be seen macroscopically. This is called a polypoid gland hypertrophy of the endometrium.

At this stage of life also is found the deeply lacerated cervix with an erosion of long standing, which gives a bloody discharge. This leads to the question of cancer of the cervix, which is most common near the menopause, both before and after. I want to emphasize strongly, at the great risk of boring you, that you should be on the lookout for cancer at all ages. It should always be kept in mind and proved to be absent rather than present in every case that presents a sore-looking cervix. I have seen a case at twenty-three years, one at twenty-six and several around thirty-five, two of which got by good men. They were both diagnosed as bad lacerations. The symptoms of cancer of the cervix you all must know, so it seems hardly worth while to enumerate them.

After the menopause, all bleeding should be looked on with the greatest suspicion. There are six main causes of it, the incidence of which in 95 successive cases of bleeding after the menopause, examined with and without ether, but with a pathological examination of the tissue removed, at the Free Hospital for Women, was as follows:

Carcinoma of the cervix	33%*
Carcinoma of the fundus	12½%†
Erosion of the cervix	21%
Polyp of cervix and endo.	11%
Fibroids	8%
Senile vaginitis	4%
Making	89%

* With an average age of 56 years.
† With an average age of 58 years.

The remaining 11% comprised cases of sarcoma of the cervix, prolapse, chronic int. endometritis, chronic nephritis, and a malignant cyst of the ovaries. Most of the carcinomas of the cervix were advanced and diagnosed on inspection, but, nevertheless, this shows that carcinoma of the cervix is the most common cause of bleeding at this time, and its preceding stage, erosion of the cervix, is the next, comprising together, 54%. Therefore, when a patient bleeds after the menopause, you may take it for granted that there is an even chance that she has a precancerous condition of the cervix or cancer. Carcinoma of the fundus of the uterus is less common, 12½%, and usually occurs at a later age than cancer of the cervix, the average age of 58 years in these cases being lower than I had thought. You may take it for granted that bleeding in a woman over 70 is sure to be cancer of the fundus of the uterus. According to these figures, taking both types of cancer, 45% of women bleeding after the menopause have cancer.

Senile vaginitis is characterized by a bloody discharge of a watery consistency, which is often quite irritating to the vulva, causing pruritus. The vaginal wall is smooth, glistening, and red in patches. Pathologically, there is an atrophy of the squamous epithelium lining the vagina, which allows the papillae which carry the blood-vessels to become exposed, leaving raw, bleeding patches.

The diagnosis of these different causes that I have enumerated is usually evident on examination, and the treatment follows logically. I wish to draw your attention to some of the troublesome ones only.

Fortunately, chorio-epithelioma is rare because its early diagnosis with certainty is difficult. The first warning given is a sudden hemorrhage following, within a few days, weeks or months, the passing of a hydatid mole, or miscarriage, or labor. It is supposed always to be preceded by a mole and in the latter two cases—miscarriage and labor—only part of the placenta may have degenerated into a mole. After such a hemorrhage, the patient must be etherized and carefully examined, especially the inside of the uterus, with a curette, used gently because of the danger of causing metastasis. The diagnosis may be made on inspection if a bluish tumor is seen growing in the cervix or vagina. The tissue obtained with the curette shows, in the positive cases, syncytium and Langhans' cells, or either one alone. If such a find is made two weeks or more after the uterus has been emptied by miscarriage or labor, the diagnosis of chorio-epithelioma is very probable, because these cells die soon after the fetus dies, or leaves the uterus, because they are largely concerned in getting the necessary food from the maternal blood for the fetus and, like all cells, die out when their function is ended.

Fibroids are usually easily diagnosed. The difficult ones are the small submucous variety, and these require ether examination. The uterine cavity is mapped out with the curette and if in drawing it along the wall, the curette jumps up and then down over a hummock, or if a bulging of the wall is felt, where there should be none, one may be certain of a fibroid. Do not be misled by the internal os, for in drawing the curette out over that edge, the feeling is somewhat akin to that of a fibroid.

Fibroids often start to increase in size rapidly, that is, one can see a perceptible change in their size at intervals of one or two months. Most of these show microscopically signs of rapid growth, that is, many nuclei, staining deeply, with more mitotic figures than usual. Occasionally, in only 1 or 2% of all cases, such a fibroid turns out to be undergoing sarcomatous degeneration. Therefore, it is wise to take out such a fibroid.

The uterine polypi of small size, that is, those growing from the endometrium, can be diagnosed only by the curette, and frequently they are missed with that because they are soft; and as it is difficult to reach all parts of the uterine cavity with certainty, they may be passed by. If it is a question of whether it would be better to try to save the uterus, that is, if the patient wants children, and it is also thought best not to use radium or x-ray, then the uterus should be opened through the abdomen and inspected to make sure that there is no polyp that could be removed, before doing a hysterectomy.

Polypoid gland hypertrophy can be diagnosed only by the curette. One finds polyp-like pieces of tissue and thick strips of endometrium which macroscopically show dilated glands of a translucent ground-glass appearance scattered through them—in the aggregate, a large amount of curettings.

The diagnosis of cancer depends entirely on remembering that there are three types,—the epithelioma of the outside of the cervix, the adeno-carcinoma of the cervical canal, and the adeno-carcinoma of the fundus. They can be diagnosed in the early stages only by means of the microscope. When well advanced, the epithelioma can be recognized on inspection by its ulcerated appearance, if the tumor is of the corroding type, or by the cauliflower appearance, if of the so-called everting type.

Adeno-carcinoma of the cervical canal is recognized as cancer because, when first seen, it is usually well advanced and has ulcerated away the external os. The case which fools you is that in which inspection shows a perfectly normal-appearing cervix from the outside; it may be lacerated, but it is smooth, but which, nevertheless, is a mere shell full of cancer which may extend to the bladder wall and into the broad ligaments. For that reason, never fail to scrape out the canal with a small curette when you examine your patient. It is easily done, and the tissues, put in 5% formalin solution and sent to a competent pathologist, solve the question. If you get a large amount of crumbly, soft tissue, accompanied by sharp bleeding, you may be sure it is cancer. A few firmly placed tampons stop the bleeding.

Adeno-carcinoma of the fundus nearly always occurs after the menopause. You never want to feel that it cannot be cancer of the body of the uterus because the uterus is normal size or even smaller than normal. This type grows into the cavity of the uterus rather than into the wall, causing no enlargement at first, the reason for this being that the endometrium is sharply defined from the muscle of the wall so that it is natural for the tumor to grow in the line of least resistance, inward, and also the cancer starts on the surface, the deeper ends of the glands being much less active than the other parts. In the cervical canal quite a different picture is seen, for here the glands lie right in the muscle and have no choice but to grow there, thereby reaching the lymphatics immediately and causing metastases more quickly than either of the other two types, both of which grow on the surface. Also that is why the adeno-carcinoma of the cervical canal is more dangerous than the other two kinds. Usually an ether examination, with exploration of the uterine cavity, is necessary to make a diagnosis of cancer of the body, but it is always worth while trying to reach the inside with a small curette without ether, for you may catch a piece of the growth large enough for examination.

I want to say a little about the cases of cancer that we see. We are getting more and more each year now,—I suppose because the public is becoming educated,—but most of them are well advanced cases. One reason for this is that quite a number do not have any bleeding, which is the symptom that calls attention to trouble, until the disease is well along. The bleeding is caused by ulceration which does not occur until the blood supply is poor, so if there is no trauma or infection to start bleeding, the disease gets a head start on its victim. The second case is that where the patient bleeds and waits, is too busy to consult a doctor, or puts it off, or does not like to go to a doctor about such a trouble, or thinks it is only the change of life, or any one of several unintelligent reasons. The third case is the patient whose doctor tells her that she ought to be examined and she refuses to be, or puts it off. The fourth case is where the doctor says it is the change of life, or does not like to examine an old friend, or tells her it does not amount to anything and will stop in a little while. It has been my experience that nearly all come in the first three classes, but the exception, the fourth class, comes often enough more than to prove the rule. In gynecology, bleeding means cancer, until proven otherwise, and it is so easy to remove a piece of tissue from a reddened area on the cervix or explore the cervical canal with a small curette in your office and put the tissue obtained into 5% formalin to send to a pathologist, that there should be no fourth class.

In making an examination, always bear in mind the fact that there may be two or more causes present in the same case. Polyps and fibroids often occur together. Fibroids and cancer at the same time are fairly frequent. Senile vaginitis may mask an early cancer of the cervix. You cannot afford to be content with finding one cause for the trouble, because finding a second or a third may put an entirely different complexion on the case from what the first one gave.

While the cause is nearly always evident on examination, there are many cases which require ether examination and D. & C. to decide what the diagnosis is. I think it may be taken as a general rule that where the cause is not immediately obvious a D. & C. should be done. The only exception that comes to my mind is the young girl with menorrhagia just beginning, in whom it is frequently advisable to try hygienic methods first, because the likelihood of her having cancer or a polyp of the endometrium is small. Then if she does not improve soon, the D. & C. should be done, for its negative value, if nothing more. In doing a D. & C. it is easy to be ready to do anything that may be necessary to cure the patient.

The treatment follows on the diagnosis and is usually obvious, the making of the diagnosis being the treatment in some cases, such as the removal of a submucous, pedunculated fibroid by a D. & C.

I think the treatment can be made clearer if we consider the methods of treatment at our command and what they are good for. When the patient has a constitutional disease such as anemia, chronic nephritis, high blood pressure, or what not, and no local cause can be found, the treatment is obvious.

Quiet resct in bed is necessary when the bleeding is profuse and is especially valuable in the young women or girls with profuse menstruation. They should be in bed during their periods. In these same patients hygiene, directed towards better physical development, will sometimes get them well, if persisted in for several months, having them stay in bed during the catamenia. Take them out of school, lay out a written schedule of when to go to bed, get up, bathe, eat, exercise, what kind of exercise to take —the main point being to avoid fatigue; and generally schedule their lives as they would be if they went to one of these training camps.

If no improvement is apparent in two or three months, then advise an ether examination.

Packing of the vagina is resorted to when rest in bed does not control the bleeding. The main things to remember are to put either alcohol or iodine on the inner end of the gauze as an antiseptic, and to pack the vault of the vagina tightly, first back of the cervix, then on each side and the front, thereby raising the uterus and putting the broad ligaments on the stretch, which seems to decrease the uterine blood supply. That it is effective is known to every surgeon who has resorted to pulling up on the cervix to stop bleeding from the uterine vessels during an operation on the uterus, or hysterectomy.

The drugs are of little benefit. Ergot and hydrastis are useless, except in bleeding due to retained products of conception. Styptcin and calcium chloride are said to work sometimes, but are generally useless.

Pituitrin is worth trying in cases where no cause can be found for the bleeding, especially the young women.

Dilatation and curettage finds its greatest value in diagnosis. It is used as a cure when the cause is in the cervix or endometrium and not malignant, polyps, submucous fibroids, retained products. It removes the polypoid gland hypertrophy, but that may recur. Some of the young girls, with uterine insufficiency, get well if they are curetted at each catamenia for several successive months. This is more dangerous, however, than the x-ray or radium.

Abdominal operation is called on for the many causes found in the abdomen and for malignant conditions. It seems hardly necessary to go into details. It should be remembered that with a simple retroversion and prolapse, a suspension may not effect a cure of the bleeding, either because the bleeding is due to a hypersecretion of the ovary instead of the retroversion, or the uterus does not regain its tone.

The two methods of treatment which render satisfactory the treatment of the uterine insufficiency cases, both in young and old, are radium and x-ray. They both act in the same way, that is, by killing the follicles in the ovaries, and thereby stopping the internal secretion. They are more effective on ripe and ripening follicles than on the primordial ones, and therefore it is harder to cause amenorrhea in young women, who have many follicles, than in old, and also hard to cause permanent amenorrhea because all of the follicles must be destroyed to obtain it. They are supposed to have a direct action on the uterus, and also on fibroids, for the treatment of which they are frequently used. There is an increase of connective tissue in the uterus and fibroids; it is said that the treatment causes an obliterating endarteritis, and fibroids decrease in size. This last effect, however, may be comparable to the shrinkage occurring often at the menopause, and be due to action on the ovaries rather than to direct action on the tumor.

The two methods differ in that the radium is much more powerful, much more effective than x-ray. X-ray can be given in two ways, large or small doses as the urgency of the case requires, but even with large doses it takes many more treatments to attain the desired effect than with radium. X-ray requires large doses for from 9 to 18 weeks to produce amenorrhea, while one treatment of radium will do it. The reason for it is, of course, that if x-ray treatment were continued for many hours at a time—long enough to produce amenorrhea—burns of the skin would result, and also it is decidedly uncomfortable to be in one position for as long a time as x-ray would require. Whereas radium can be placed in the uterus and the patient simply stay in bed for the required length of time. X-ray treatment is also much more expensive than radium on account of the apparatus used.

We have had more experience with radium because we are lucky enough to have some and it is easy to use. For the young girl with uterine insufficiency, we put 50 mg. of radium in the uterus because that gets it nearer the ovaries than any other place except the rectum,—to which, however, radium seems to be very irritating,—and leave it from 4 to 12 hours, depending on how much effect we wish to get. It is, of course, better to leave it too short a time rather than too long because it is simple enough to give one more treatment, if necessary. Radium works better in these cases than x-ray because the latter is not so effective in women up to the age of thirty-five as it is later in life. Formerly many of these cases came to hysterectomy, which can now be avoided.

If amenorrhea is caused by radium it has not been established whether it is permanent or not. We do know that, in young women, if small doses are used, it will cause amenorrhea for several months only, but whether large doses will cause it permanently only time will tell. X-ray in large doses causes amenorrhea in young women for several months to a year, but rarely causes a permanent amenorrhea unless the treatment is continued. In older women, of forty and over, it gets its effect much quicker and it is probably more permanent.

Both are very valuable in decreasing bleeding in fibroids in those patients who require operation but who are poor surgical risks on account of having a secondary anemia due to their long-continued profuse menorrhagia. The bleeding can be decreased or stopped, giving the patient a chance to regain strength before being operated on.

Radium is especially valuable in stopping the bleeding from inoperable cancer of the cervix. Here it acts locally to a marked degree. In most cases the ulcerated cervix cleans up and presents a smooth surface like scar tissue, ridding the patients of the bleeding and discharge and relieving them immensely, after two or three treatments at intervals of about a month. The change externally is almost miraculous but, of course, the disease continues in the broad ligaments and glands. Occasionally it seems to stimulate the tumor, hastening its growth and the death of the patient.

You have to be careful in using it, however, because vesico-vaginal and recto-vaginal fistulae are very likely to follow if too strong a dose is used where the vaginal wall is deeply invaded.

X-ray will also stop this bleeding, but it is harder to apply and the treatment takes a much longer time.

A CRITICAL REVIEW OF INTESTINAL BACTERIOLOGY IN RELATION TO CERTAIN DIARRHEAS OF INFANTS.*

By Warren R. Sisson, M.D., Boston.

The purpose of this paper is to review, from a critical point of view, recent studies concerning the relation of the intestinal flora to certain forms of diarrheas that occur in infancy.

The question has been raised by many authors, whether the feces represent accurately the bacterial flora of all levels of the intestine, and can be considered a satisfactory source of material for studies of this subject. By a comparison of a stained fecal specimen with the number of colonies occurring on plates made from a similar specimen, it can easily be shown that only a small per cent. of the total number are viable. Eberle[1] estimated that 10.6% of the total number of organisms could be cultivated upon agar, 4.5% on gelatine. Klein[2] and Strassburger[3] estimate the percentage of viable forms as much lower. Furthermore, from studies of known cases of ileocolitis caused by the dysentery bacillus, it is safe to assume that, in general, only a relatively small per cent. of the organisms present can be cultivated upon the media commonly employed. Much has been written concerning the causes of this restricted growth. Conradi and Kurpjuweit,[4] Moro and Murath,[5] and others, have claimed that an inhibiting substance in the stool may, in part, explain the condition. Moro and Murath[5] conclude that the normal infant's stool contains inhibitive agents which are to be considered as natural protective substances. These are said to be present under all conditions of diet and health. These statements, however, lack demonstration.

Studies on autopsy material by Escherich,[6] Moro,[7] and others, on the variation in the flora at various levels in the intestinal tract showed that certain cocci and the B. lactis aerogenes were more numerous in the duodenum. Hess[8] has attempted to recover duodenal contents for bacteriological study by means of a catheter. The results of this study do not establish a definite flora for the duodenum, but suggest that certain cocci are more numerous at this level. Sufficient cognizance was not taken of organisms introduced in the diet, and of contamination from the gastric contents, the esophagus and the mouth. Experiments performed upon dogs by Cushing and Livingood,[9] also more recent studies upon puppies by Sisson,[10] show that in these animals one cannot speak of characteristic local flora. The evidence thus far assembled seems to show that fecal specimens contain all of the organisms at other levels, although an inaccurate picture of the flora may be obtained because of the relatively few viable forms, and the failure to cultivate, symbiotically, the viable organisms.

METHODS OF STUDY.

The morphological studies have been based principally upon the microscopical examination of stained smears. The early researches of Escherich,[6] which still form the basis for many of our ideas of intestinal bacteriology, were made in this way. The method has distinct limitations. Organisms cannot be definitely identified, and only general impressions of the types of the flora, depending upon their reaction to the Gram's stain, can be made. The method may be of some value in ascertaining the relative number of the organisms.

Attempts have been made to estimate the relative number of organisms. Strassburger[11] and others have endeavored to make actual counts of bacteria. Erble,[12] Klotz,[13] and Kramstyk[14] have made similar computations. The methods employed by these authors have been essentially the same. A definite amount of dried feces has been taken and dilutions made. The results of these investigators show marked variations, and lack sufficient confirmation to be of any scientific value. The great difference in consistency of feces, the disintegration of organisms and products of intermediary metabolism make it almost impossible to eliminate sources of error. Furthermore, estimates of numbers of organisms give no idea of the various kinds of organisms present. As yet, there is no satisfactory clinical method for estimating the number of organisms occurring in the intestinal tract. It is impossible, therefore, to say that the number of bacteria is either definitely increased or diminished in diarrheal conditions in infancy.

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* This paper was written in the course of some studies on the intestinal flora carried on in the Department of Pediatrics of the Johns Hopkins University.

The cultural methods for the study of the intestinal bacteria are not peculiar to this field. By use of the various media, it is possible to identify essentially all of the organisms present. Two problems concerning cultural studies, however, should be mentioned. Up to the present time, no adequate study of the anaerobic bacteria has been made, due to the lack of a satisfactory method. Although such studies are desirable, it seems questionable if they would be of great clinical value. It is difficult to consider the conditions within the intestinal lumen as strictly anaerobic.

The second problem concerns a satisfactory method for studying the symbiotic relation of the various organisms occurring in the intestines. Bacteria in large numbers may thrive within the intestinal tract in the presence of many other forms, but *in vitro* such growth cannot be satisfactorily reproduced. This fact must be considered in the interpretation of all cultural studies of the intestinal flora.

Various chemical properties of stools have been considered criteria of the organisms present in the intestinal tract. The reaction of the feces has been taken as an index of certain bacterial processes. We now know that alkaline and acid stools may be found under many conditions, and are of little diagnostic value. Large amounts of fatty acids, for instance, may occur in stools of breast-fed infants. The chemical studies of the stools in diarrheas, especially those forms associated with disturbances with carbohydrate metabolism, give no definite clue as to the nature of the bacterial activities that may be present in the intestine. Certain well-recognized end-products of bacterial action upon the proteins, occurring in the urine, such as indol, skatol, glycuronic acid, and the conjugated sulphates, have no recognized toxic action when occurring in intestinal disorders in infancy. It is interesting that the conjugating action of the sulphates with phenol, according to Meyer,[15] persists even in the most advanced stages of malnutrition. Similarly, the decomposition products of carbohydrates and fats, such as acetic, lactic, butyric acid, are undoubtedly, in a large measure, oxidized.

NORMAL VARIATIONS IN FLORA.

The normal intestinal flora of infants has certain general characteristics, the recognition of which is necessary for the understanding of the relation of bacteria to infantile diarrhea. The alimentary canal of the new born is sterile. The exact course and significance of the subsequent infection is still undetermined. Schottellius,[16] contrary to the views of Nuttall and Theirfelder,[17] contends that the intestinal bacteria are essential to life. Opposed to this, however, is the more recent work of Küster,[18] who was able to raise lambs under sterile conditions for 35 days. These animals are said to have developed normally. The meconium contains organisms seven to eight hours after birth. The flora at this period consists chiefly of spore-bearing forms and bacillus coli. The nursling's stool is characterized by large numbers of Gram-positive bacilli, called the bacillus acidophilus and bifidus. Cocci are also numerous. The flora of the older artificially-fed child is less simple. It is represented chiefly by Gram-negative bacilli—the B. coli predominating. Bacillus lactis aerogenes, spore-bearing forms, and streptococci are common.

It is of interest to know to what extent certain factors, such as fasting, may influence the character of the intestinal flora. It would seem reasonable to expect that the number of intestinal bacteria would be greatly reduced by periods of starvation. This is actually the case, and in general starvation causes a relative amicrobism of the intestinal tract. Cushing and Livingood[9] showed that, after fasting periods of 24 hours very few organisms could be isolated from the small intestine of dogs. These authors were also unable to isolate organisms at operation from the distal loops of intestinal fistulae in human subjects. In consideration of the technic employed, and particularly the small amount of material used, it is improbable that an absolutely accurate picture of the existing bacterial condition was obtained. Kendall[19] made an interesting observation upon Levanzin during the fasting experiment carried out at the Carnegie Nutrition Laboratory in Boston. On the 31st day of the fast, food was given at 9.38 a.m. About four hours later a high enema was given, and the recovered dejecta studied bacteriologically. Large numbers of organisms were obtained. These were similar to the normal flora of man at this level. Recent experiments by Sisson[10] upon puppies show that the number of organisms in the small intestine after periods of starvation can be greatly reduced.

There are few exact data concerning the influence intestinal secretions and products of digestion may exert upon the intestinal flora. As mucus is greatly increased in diarrheal conditions, it has been considered to have bactericidal properties. Opposed to this, however, is the fact that organisms will grow luxuriantly in solutions containing mucus. Any alterations that may result from variations in the character and amount of the intestinal secretions and products of digestion must be regarded from a purely hypothetical point of view.

Possibly the most important factor that may modify the character of the flora of the intestine is the diet. Before discussing the effect of various food elements, mention should be made of the results of ingestion of various organisms. The transitions in the bacterial flora by ingestion of organisms has been championed especially by Metchnikoff.[20] It is well known that this author considered that feeding of milk which is soured by B. bulgaricus caused an establishment of this organism in the intestinal tract. The work of Leva,[21] Cohendy,[22] and Belonovsky[23] has been used to support this view. These authors, however, never satisfactorily showed that the B. bulgaricus became a predominating organism in the intestine. Luerssen and Kuhn,[24] also Distasto and Schiller,[25] were unable to confirm the theory advanced by Metchnikoff.[20] Rettger,[26] from some recent experiments on mice, concludes that "ingestion of foreign bacteria, even in large numbers, does not of itself bring about an elimination or displacement of the common intestinal microorganisms." The work of Raubitschek[27] and Kulka[28] supports this conclusion.

In discussing the effect of food, we may first consider the effect of high protein diet upon the flora. Wollstein[29] concludes that a high protein causes a preponderance of B. mesentericus, while B. coli is greatly increased. No definite flora was established. Rettger and Horton[30] studied the feces of rats fed exclusively on proteins. The results were not striking. The flora changed in that it became simpler. The Gram-positive forms increased in numbers. No definite relationship between the bodily conditions and the intestinal flora could be established. Herter and Kendall[31] fed monkeys and cats high protein diets, and state that a proteolytic flora was obtained.

Moro[32] and others have called attention to changes in the bacterial flora of infant stools after various diets. An acidophilic Gram-positive group of bacilli was considered characteristic of infants fed on breast milk. The feces of children fed on cow's milk was found to contain few of these organisms and numerous B. coli, cocci and proteolytic forms. Sittler[33] claims that additional lactose given to infants on a cow's milk diet causes a return of the bifidus type. Rettger[26] fed animals—rats and fowls—lactose, and found that B. acidophilus and B. bifidus became the predominating types. No data on the effects of single food elements upon the flora of infants are available.

Certain popular conceptions of the different types of intestinal disturbances in infants are based upon the bacterial changes certain food constituents are supposed to elicit. If a diarrhea, for instance, occurs after a diet with a high carbohydrate content, this is called a fermentative condition. Under these circumstances the intestinal flora is considered to consist of organisms that act primarily upon the carbohydrates. The products of this activity are thought to elicit the diarrhea. Similarly, a disturbance associated with the feeding of a diet containing a high percentage of protein is spoken of as a "putrefactive condition." The theory of these types of intestinal disturbances was undoubtedly first formulated by Escherich,[6] and amplified by his pupils. Escherich based his conception upon the following experiment. Specimens of milk were inoculated with various organisms, incubated, and the casein and carbohydrate content determined. A control specimen showed 4.6787 parts of casein, milk inoculated with B. subtilis 0.998 parts, milk inoculated with B. lactis aerogenes 3.495. The differences in the sugar content were not so striking except in the case of B. lactis aerogenes. Milk inoculated with this organism showed 1.923 parts of sugar, as compared to 3.641 in milk inoculated with B. subtilis, and to 3.671 parts in specimens inoculated with B. coli. Tobler and Bessau,[34] in an extended review of intestinal disturbances in infancy, have discussed the subject chiefly from the bacteriological point of view, as first advocated by Escherich. These authors consider that all diarrheas are primarily caused by the action of organisms upon carbohydrates (Gährung), or by their action upon proteins (Faulnis). No conclusive bacteriological or chemical findings are brought forward to support this classification of intestinal disorders. It still remains, therefore, a matter of dispute whether the intestinal disturbances discussed as fermentative and putrefactive are due primarily to bacterial activities, or whether they are caused by initial chemical changes. Kendall[35] has further emphasized the distinction between diarrheas caused by fermentative and putrefactive organisms. Based upon the protein-sparing power of carbohydrate, he has suggested that sugar solutions be given to infants with diarrheas caused by proteolytic types of organisms. This method of treatment has apparently given favorable results in many instances. There have been no clinical studies, however, which have demonstrated changes in the intestinal bacterial flora after the ingestion of sugar solutions in diarrheal conditions. The work of Rettger[26] shows that changes can be produced. This author gave lactose to rats and demonstrated a Gram-positive acidophilic type of flora in the stools. Sisson[10] was unable to demonstrate such a change in puppies by the addition of high sugar solutions to a diet of milk.

During the past thirty years a large number of organisms have been considered to have an etiological relation to infantile diarrheas. Escherich,[36] Moro,[37] and others have described so-called "Blaue Bazillose" diarrheas, also "endogene" infections in infants. The observations of those authors have never been fully confirmed, and we are left in doubt as to the exact organism thought to be associated with the condition described. The organism of the Blaue Bazillose, undoubtedly, was of the acidophilic group, similar to that found in normal breast-fed infant stools, and not unlike the Bacillus bifidus, considered by Herter to be the cause of a condition called "infantilismus." Schelbe[38] calls attention to the infrequency of these hospital epidemics of diarrhea in Germany in the past ten years, and questions the infectious nature of the condition. B. coli has been considered to elicit diarrheas, but such a causal relationship has never been demonstrated. Booker[39] suggested that certain streptococci and also the bacillus proteus vulgatus might elicit diarrheas in infancy. Bertrand[40] also found the B. proteus vulgatus in 100% of 55 stools from different diarrheal cases. Brinstock[41] and others have similarly considered the B. putrificus to be a cause of such conditions. In general, the theories advocated and the observations made by these workers have not been confirmed, and there is at present no definite evidence that these organisms can primarily elicit or prolong diarrheas in infants.

The investigations of Morgan[42] on the causal relationship of the so-called Bacillus Morgan No. 1 to diarrheas deserves special mention. In 1905 the author noted the presence of this organism in association with 28 of 58 cases of infantile diarrheal cases. Again, in 1906, he found it in 15 of 34 cases examined. The stools examined rarely contained pus and blood, and clinically these cases were in no way unlike those of the so-called acute intestinal indigestion with diarrhea. The organism was rarely found in normal stools, and never in stools positive for the dysentery bacillus. As diarrheal conditions were produced in kittens by feeding the organism, Morgan concludes that it was an important cause of summer diarrhea in infancy. Investigations of others make the identity of this organism reasonably certain. It has been found occasionally both in Germany and in the United States in association with diarrhea. It would seem, however, that further confirmatory observations should be made before the B. Morgan No. 1 can be said definitely to cause diarrheas in infants.

Attention has been called to the B. welchii as a causal factor to infantile diarrheas.[*] Of special interest in this discussion is the fact that the B. welchii is an ubiquitous organism, and is a normal inhabitant of the human intestine, except in early infancy. Knox and Ford[43] examined the stools of 18 children suffering from minor ailments and isolated the B. welchii in every case.[†] These authors found it but once in the stools of seven breast-fed children. Glynn[44] and Ten Broeck and Norbury[45] report similar findings. Tissier[46] fed pure cultures of B. perfringens[‡] to four kittens, and claims that within 24 hours a diarrhea was elicited, and that one animal died in five days after the ingestion of the cultures. (No mention is made either of the source of the material used. or of the media in which it was given.) The diagnosis of a diarrhea due to B. perfringens was apparently based upon microscopic examinations. Tissier attempted to prove that the condition may be contracted from members of the same species, and notes the development of a diarrhea in a nursing infant, after it was allowed to nurse a mother suffering from what was considered a diarrhea caused by the B. perfringens.* Korentchevsky[47] has carried on more extensive investigations. He injected rabbits of various ages, both intra-peritoneally and intravenously, with filtrates from cultures of B. welchii. These injections caused very toxic symptoms, often followed by death within three to four hours. Similar filtrates from bouillon cultures were administered per rectum. In one experiment, two of a litter of rabbits died within about ten days. No mention is made of the symptoms these rectal injections caused. No specific immune bodies were found in either of these animals; however, blood from animals treated in a similar way, but not dying from the infection, showed so-called *"fixator"* bodies, but no agglutinins or precipitins. A further series of experiments was carried out by feeding puppies ½ liter amounts of a bouillon culture of the B. perfringens. The animals gained weight; no mention is made of diarrhea being elicited,—however, specific agglutinins in dilutions, 1-50 and 1-80, were found. A series of experiments was also made upon full-grown dogs. These were fed, for a period of 86 days, cultures of B. perfringens without eliciting a diarrhea. Korentchevsky[47] records a protocol of one of these animals in which certain renal changes were noted at autopsy. Metchnikoff,[48] Hewlett,[49] and Simonds[50] have fed cultures of B. welchii to animals, but were unable to reproduce a diarrheal condition. We must conclude from the experimental studies in this field that no definite evidence has been brought forward which shows a causal relationship between the B. welchii and diarrheal conditions.

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[*] For a detailed review of the classification and the relation of this organism to diarrheas the reader is referred to a recent monograph by Simonds. (Monograph No. 5—Sept. 27, 1915—the Rockefeller Institute for Medical Research.)

[†] The presence of B. welchii in the stools is commonly based upon the so-called milk test. Freshly autoclaved litmus milk is inoculated with a specimen of feces; this is heated to 80 degrees for 15 to 20 seconds and incubated. At the end of 24-48 hours a positive test shows an acid reaction, gives a distinct odor of butyric acid, and the coagulum has a characteristic porous appearance due to the gas formation. Knox and Ford call attention to the fact that other spore-bearing forms may be present and that a similar reaction may be obtained. These authors believe, therefore, that such tests should always be confirmed by injecting the organism into rabbits as described by Nuttall and Welch, before making an absolute diagnosis of the presence of B. welchii.

[‡] Bacillus perfringens, Bacillus sporogenes enteritidis and Bacillus welchii are considered to be the same organism.

The first clinical observations to be recorded in support of the idea that B. welchii was the causal agent in certain diarrheas were made by Klein[51] in 1897, who studied an epidemic of diarrhea in adults. Later this author found the B. welchii in 4 of 11 stools from infants with loose stools, and concluded from his studies that this organism was an important etiological factor in the causation of infantile diarrhea. Klein based this conclusion not only upon the presence of the B. welchii in the stools but upon the toxic effect injections of recovered organisms produced in guinea pigs. Glynn[44] calls attention to the fact that injections of the B. welchii recovered from non-diarrheal stools have similar symptoms. Tissier[46] and Passini[52] found this organism in the stools of infants with diarrheas, and were led to a conclusion similar to Klein's.

Kendall has been an ardent champion of the theory that the B. welchii actually produced diarrhea in infants, and through his writings this conception has been accepted by some pediatrists as an established fact. In 1910 Kendall and his co-workers at the Boston Floating Hospital found the B. welchii to be present in the stools of 22 out of 293 cases of diarrhea in infants. In 1911, Kendall, Day and Bagg[53] found positive reactions for the B. welchii in 33 of 283 cases examined. In 1912, Kendall reported the presence of the organism in 53 of 135 cases examined. In 1914, Ten Broeck and Norbury,[45] also working at the Boston Floating Hospital, found the B. welchii to be present frequently in the stools of normal infants and in those of infants with various nutritional disturbances. For instance, 6 of 53 cases whose stools showed the presence of the dysentery bacillus also gave positive tests for the B. welchii. Veeder, Kilduffe and Denny[54] found the B. welchii in one of a series of 100 cases with diarrhea. Sylvester and Hibben[55] examined the stools of 122 cases of gastro-intestinal disturbances and, after repeated tests, found the B. welchii in 100 of these; 38 of these were clinically cases of ileocolitis.

Kendall and Smith[56] have described the symptomatology of this type of diarrhea associated with the B. welchii. These authors state that it is similar to the so-called infectious diarrhea caused by ths dysentery bacillus. The onset is sudden, the incubation time short. It is associated with fever, which continues for a number of days. There is generally marked prostration, and not infrequently nervous symptoms develop. Vomiting and diarrhea are said to occur early in the disease. The stools are numerous (20 to 30 a day) and, although they vary in character, they usually contain pus, blood and mucus. No pathological findings characteristic of this form of diarrhea have been described.

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* Bacillus perfringens, Bacillus sporogenes enteritidis and Bacillus welchii are considered to be the same organism.

Kendall suggested that the diarrhea in these cases be treated by giving a food with a relatively low carbohydrate and a high protein content. This therapy was based upon the conception that the carbohydrate splitting action of the B. welchii caused the loose stools, and that this action could be eliminated by feeding a diet relatively high in protein. The beneficial effect of this dietary measure in cases of diarrheas associated with the B. welchii has been considered by Kendall[35] and others to be confirmatory evidence that the condition was caused by this organism.

The facts thus far assembled fail, in my opinion, to establish the identity of a type of diarrhea in infants caused by the B. welchii. The lack of satisfactory experimental and clinico-pathological evidence warrant such a conclusion. As has been pointed out, it cannot be definitely stated whether the beneficial effect of protein milk and similar diets, with a relatively low carbohydrate content and a high protein content in these diarrheal conditions, is due to bacterial or chemical changes that may occur in the intestine. Furthermore, the fact that the B. welchii may be found normally in large numbers in the intestine makes it improbable that it bears a causal relationship to diarrheas in infancy.

The most definite knowledge concerning the bacteriology of diarrheas occurring in infants concerns those cases in which some strain of the mannite fermenting dysentery group is found in the stools. For the early researches on this subject, the reader is referred to the publications of Flexner[57] and his co-workers. More recently, Kendall[35] and his co-workers at the Boston Floating Hospital have given additional confirmations to the early work of Duval and Bassett[57] in which attention was first called to the association of the dysentery bacillus with summer diarrhea of infancy. In 1910 Kendall[35] found some strain of the dysentery bacillus, usually the Hiss Y type, in 75% of 52 clinical cases of ileocolitis. In 1914, Ten Broeck and Norbury,[45] working also at the Boston Floating Hospital, isolated the mannite fermenting type of the dysentery bacillus in 68% of 79 cases of ileocolitis. During the season of 1915, I had the opportunity to observe, at the Boston Floating Hospital, 16 clinical cases of ileocolitis. From 15 of these the Hiss Y type of dysentery bacillus was isolated by Norbury. In many of these cases positive cultures were obtained only after repeated examinations of the stools. The single case of this series of clinical cases of ileocolitis from which the dysentery bacillus was not isolated, showed the presence of positive agglutinins in the blood in high dilutions. Furthermore, smears showed many pus cells and relatively few Gram-negative short bacilli—a finding which must be regarded as very characteristic for this form of diarrhea associated with the dysentery bacillus.

The recent experimental studies of Hayden, Speed and Koontz[59] give additional evidence to the bacterial nature of the etiology of this form of diarrhea. These workers fed cultures of the dysentery bacillus (Hiss-Russell type) to kittens. Not only was a diarrhea with pus and blood produced, but positive agglutinins for the organism fed were found in the blood. During the course of these experiments one of the workers developed a diarrhea. Pus and blood were noted in his stools, and an organism similar to that given to the kittens was isolated. The infectivity of the condition has been frequently observed, especially in institutions and among various members of the same family who developed the disease. In contrast to the ubiquity of the B. welchii, the dysentery bacillus is rarely, if ever, found in the stools of normal infants. However, as this organism is present in the feces of the majority of cases of diarrhea in infants with pus and blood in the stools, and as a similar condition can be reproduced in animals, this type of diarrhea must be considered to be of an infectious nature, and caused primarily by the mannite fermenting strain of the dysentery bacillus.

It may be stated, then, that the dysentery bacillus, in one of its forms, is the only organism that has definitely been proven to be responsible for disease of the gastro-intestinal tract in young children. Conclusive proof of the etiological importance of any of the other organisms that have been described by various authors is still to be brought.

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EFFICIENCY IN THE EXAMINATION OF SCHOOL CHILDREN.

By George E. Deering, M.D., Worcester, Mass.

The object of school inspection is to detect and prevent infectious or contagious disease, to determine the existence of abnormalities in pupils, and to detect vermin. We should also see that faults are corrected, and that absence from school is prevented.

This paper describes an efficient method for carrying out the general or annual inspection, the details of which have been arrived at, only after numerous time and motion studies, extending over several years, and having for their object thoroughness and speed. Each pupil is examined for twenty-six of the twenty-seven conditions named on the clinical card furnished by the Worcester Board of Health. This is accomplished without disrobing and without calling the attention of other children to the special defects of an individual. Every child is treated during the inspection exactly like every other child, regardless of defects found. The examination is made in the schoolroom; each pupil must lose approximately four minutes' time. The teacher gives part of her time, although this in no way interferes with her overlooking the class, and keeping the children employed. The entire time of an assistant is required. In the smaller schools where the principal has no assistant, the school department willingly furnishes one for the examination.

Three instruction cards are used,—one for the assistant, one for the teacher, and one for the medical inspector. They are used as follows: The method of inspection and what is to be accomplished is briefly outlined to the assistant, prior to the day of the inspection, and she is given the assistants' instruction card together with the teachers' instruction sheet and medical inspector's card. These she is to read and understand. Twelve teachers' instruction sheets are used; these the assistant distributes, or has distributed, on the morning of the inspection. The cards read as follows:

1.

INSTRUCTIONS FOR ASSISTANT IN THE MEDICAL EXAMINATION:

We will begin the inspection in the higher grades.

You will see that each teacher has the clinical cards for her class, and that she knows when the inspection in her room is to begin. She should distribute the clinical cards a few minutes before we are expected.

On the morning of the inspection, hand each teacher her instruction sheet.

When the inspection of pupils begins, you will mark cards as per instructions.

When the examination is completed, obtain the instruction card and list from the teacher. The names on the list are to be checked on the clinical card. Keep the list; we will examine these children later.

Read and understand the teachers' instruction sheet yourself.

2.

TEACHERS' INSTRUCTION SHEET.

The medical inspection will take place in the schoolroom.

The examining physician will give oral direc-

tions to the pupils, except as indicated under "Teachers' Instructions." In the first part of the inspection, the pupils form a line in the front of the room, each pupil carrying his or her health card. The second part will be conducted with the pupils in their seats, with their hands in front of them on top of their desks. The health card should be on the desks at this time. In the third and final part of the inspection, the examiner will be seated with his back to a window and near a table at which the assistant is sitting. The pupils will come to the examiner, two rows at a time; each pupil, when he or she reaches the examiner, is to place the health card on the table in front of the assistant. The routine school work must be stopped during the second part of the examination. *During the first and third parts, all pupils, except those in front of the examining physician, should be studying, or otherwise occupied.*

If this method is employed and the "Teachers' Instructions" are followed, no child need lose more than four minutes from school work, nor will the examination of any room of forty pupils, or less, consume more than fifteen minutes total time.

TEACHERS' INSTRUCTIONS.

As soon as you receive this instruction sheet, make a list on a fresh sheet of paper of the names of absent pupils, and also state the total number of children present today (the day of the inspection). On the same paper make a list of the pupils in your room who have, or whom you suspect of having, any of the following abnormal conditions:

1. Deformity.
2. Paralysis.
3. Stammering, or voice defect.
4. Chronic cough (over two weeks).
5. Nervousness (any kind).
6. Kidney trouble (frequent basement visits).
7. Broken bones.

These lists of names, together with this instruction sheet, should be handed to the assistant at the close of the medical inspection in your room. On the day of the inspection you are to sort the health cards, and place those for each row on the front desk of that row. When the medical inspector enters the room, have the children, on whose desks the cards are placed, distribute the cards to the pupils of the row.

You are to see that the schoolroom is kept quiet during the examination, and that the rows of children are kept moving, so that during the third part of the inspection there are never less than five pupils in front of the examiner. The pupils are to be employed at some task that does not require your entire attention.

Please reread the italic sentences on this sheet just before the inspection begins in your room.

The medical inspector's instructions are on a 3 x 5 card, in the following form:

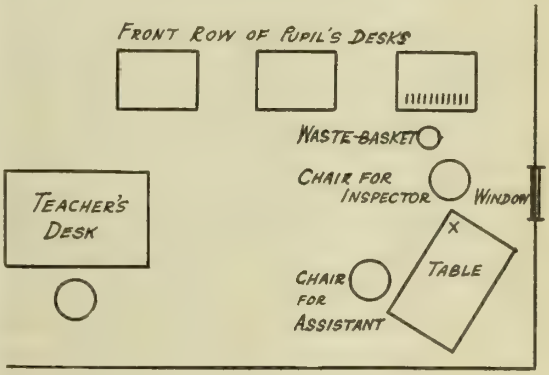
3.

Medical Inspector's Card.

Front of Room	—		Heart
Desk	—	Sight	General appearance Skin of hands Rachitis
Window	1	Sight	Skin of face Eyes Nose, adenoids cold Fractures
	2	Sight Touch	Anemia Nutrition
	3	Sight with Stick	Teeth Throat Tonsils
	4	Stick Sight Smell	Hair (Pediculosis) Ears Glands

The details of the arrangement of furniture in the room are very important, as will be made clear when the method of inspection at the window is explained. If the furniture is correctly placed there will be no confusion of the pupils in getting to the inspector, leaving the card in the proper place and returning to their seats, and the endless coaching to get them near enough to the examiner will be avoided.

Generally, a window on the right hand side and in the front of the room is chosen. The inspector's chair is placed back to the window, with a small table on his left hand, a waste basket on his right and a desk just beyond the waste basket. The tongue depressor sticks are arranged in piles of five or six on the desk, at the inspector's right hand.



When for any reason it is impractical to use the small table, the school room table or even the teacher's desk may be used. If the left hand side of the room is to be used, the furniture arrangement will, of course, be reversed.

On completion of the room arrangement the actual inspection begins. This is carried out in three separate procedures, as suggested by the Medical Inspector's Card.

1. In front of room. 2. At pupil's desk. 3. At window.

1. A line is formed in front of the room. The inspector listens to two or three heart beats in each case. When pupils have once been examined for heart murmurs, they are not reëxamined the following year unless their health cards show some severe illness or contagious disease since the last examination. When murmurs are found, as is the case with other serious abnormalities, the pupil is more thoroughly examined, in the school office after the entire examination for the building is completed. This saves time and avoids calling the attention of other pupils to the defects of an individual.

2. The pupils are now told to place their hands on top of the desk. The medical examiner passes up and down the aisles, examining the hands for skin affections and for evidence of rickets.

3. After completing the heart examination and the examination of pupils in their seats, the physician takes his place in front of the window and explains to the pupils just what they are to do at the "window inspection," something as follows: "You will come to me in rows, beginning with the last row. When you get to me place your card on this corner of this table. Go to your seats through this aisle, around the back of the room." This method places the health card in front of the assistant at just the right moment and brings the children close to the inspector without constant coaching, and gets them to their seats without confusion.

There are four processes in the window inspection; the divisions are made in order to concentrate the attention on one part of the anatomy at a time, and to use the senses as singly as possible, as this makes for concentration, thoroughness and speed. In practice these processes are so rapidly performed that to an observer it appears like a tooth and hair inspection only. As the pupil approaches the examiner, the latter observes the condition of the skin of the face, whether or not glasses are worn, or if there is strabismus, blepharitis or conjunctivitis, etc. He also notes whether the child has a cold or if there is any nose abnormality or signs of adenoids. At this instant the presence of fracture and other trauma is noted. When the pupil reaches the examiner, sight and touch are used to determine anemia and nutrition. The probability of anemia is judged by the color of the skin and lips, the inverted eyelid, and the mucous membranes of the mouth. Nutrition is judged by the child's appearance and by the feel of the right arm, grasped by the examiner's left hand. The wooden tongue depressor is used in examining the mouth conditions, teeth, throat, and tonsils. It is also used in the examination of the hair for pediculosis. This examination and that of the ears and glands are the final ones at the window, and must be so conducted that the pupil, on its completion, is facing the aisle through which he is to return to his seat. This is accomplished by examining the left side of the head and neck and left ear first, then the right side. With furniture arranged as described, this starts the pupil for his seat without confusion.

Immediately on completion of the examination the list of names of defective pupils is secured from the teacher, and the examiner and assistant pass to the next room. The defective children are examined in the school medical office, together with any doubtful cases the inspector may have noted, at a convenient time after the entire general inspection is completed. No questions are asked at the examination; sight and touch, hearing, smell, and the teacher's words are depended on for information.

In 1915, fourteen hundred and fifty-four pupils were examined in ten hours and fifteen minutes. This means that four children were examined every minute for every condition on the clinical card, except hernia. The assistant, with nine hundred and ninety-nine of these pupils, had never assisted at a medical inspection before. In 1916 and 1917, with greater familiarity with the details of the examination and assistants with more experience, the time consumed was somewhat less. These figures are for the regular inspection, and do not include reëxamination.

This method of examination is obviously imperfect, but the whole method of school inspection, in Worcester at least, is imperfect and will remain so until time is spent in standardizing and coördinating records and methods, and until sufficient medical inspectors and nurses are adequately paid to conduct properly the general inspection, as well as the daily inspection. This method, however, has three great advantages: first, it is very rapid; second, it is comparatively thorough; and third, it is very flexible.

As to rapidity, a room of forty pupils can be examined in from fourteen to seventeen minutes. A school of four hundred and eighty pupils can be examined in less than three consecutive hours, or if one room is taken daily, not over three hours and forty minutes should be consumed for the building. A group of four school buildings, having collectively fifteen to sixteen hundred pupils, can be examined in four consecutive forenoons; no teacher need use over five or, at the most, eight minutes of her time. The total time for each pupil away from school work is only about three or four minutes.

As to thoroughness; of the twenty-eight conditions for which examination is required by the Worcester Board of Health, twenty-seven are examined for. We are not permitted to strip children, hence examination for hernia is omitted. As to the other twenty-seven conditions, the examination is thorough enough to detect any abnormality that can be detected by observation. Questioning young children is impractical; it consumes much time and secures, at best, very unreliable information. In the secondary examination, any doubtful cases are reëxamined, as well as those children referred by the teacher. This prevents error and assures the sending of pathological cases only to the family physician, to the specialist, or to the hospital. The records kept allow comparison of the individual's condition, of the condition of a given room or of a special class, as well as the general conditions regarding health in the school building from year to year.

As to flexibility, one room or twelve may be examined in a forenoon, special attention may be given to one or more conditions if desired, and the secondary examination enables the examiner to study or to attempt the correction of any special abnormality or class of abnormalities.

SUMMARY.

1. This method of examination is very rapid and flexible, and comparatively thorough.
2. Each person taking part is informed in writing, just before the inspection begins, of the method of procedure, the part they are to take in the examination being clearly stated.
3. The light and furniture arrangement must be correct as to detail, if thorough and rapid work is to be performed.
4. Dividing the inspection into three distinct parts, aids the inspector in concentrating one or more senses steadily on one part of the anatomy. He consequently does better and quicker work.
5. The information obtained from the teacher in a minute or two would require many times as long to acquire from the individual pupils, if, indeed, it was possible to secure it at all.
6. The secondary examination is a most valuable part of this method.

GUNSHOT WOUND OF THE POSTERIOR CORD OF THE BRACHIAL PLEXUS.

By James K. Young, M.D., F.A.C.S., Philadelphia,

Associate Professor of Orthopedic Surgery, University of Pennsylvania; Professor of Orthopedic Surgery, Philadelphia Polyclinic; Orthopedic Surgeon, Philadelphia General Hospital.

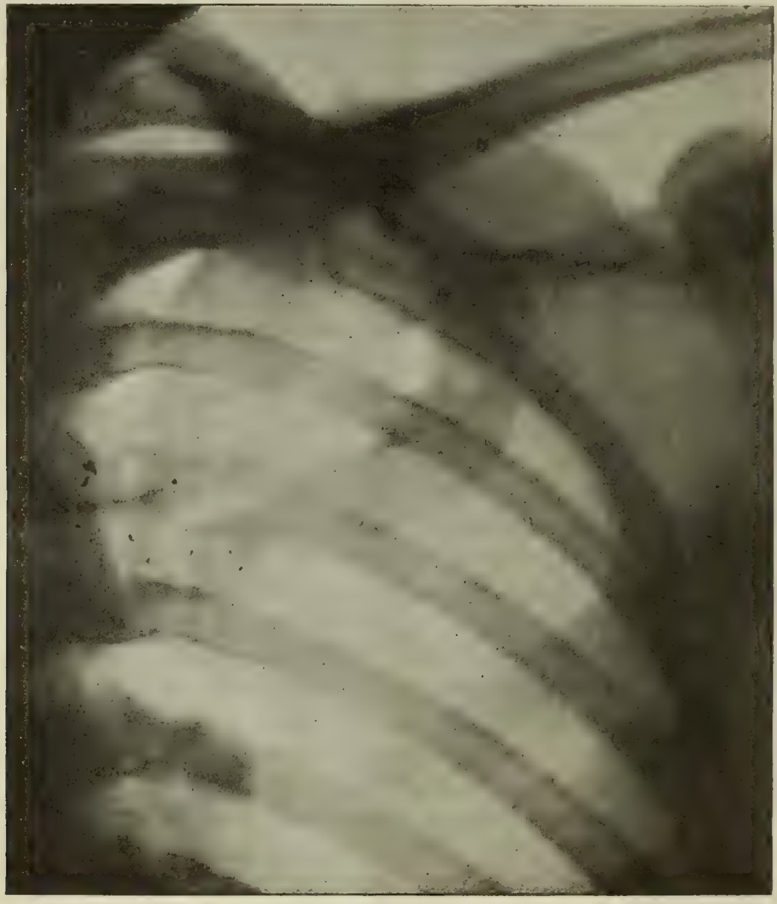
The following interesting case of gunshot wound of the posterior cord of the brachial plexus contains so many interesting features, and treatment has proved so convincingly satisfactory, that it is thought worthy of recording.

The patient, a young man of 24, applied for treatment at the Philadelphia General Hospital, offering the statement that he was the victim of a gunshot wound resulting in paralysis of his right arm. He asserted that five months previously, he had been shot through the right shoulder by means of a steel-jacketed revolver bullet. Upon examination it was found that the missile had passed under the middle third of the clavicle, and that its path of exit had been through the infraspinous area of the scapula, and that it had fractured the fourth rib posteriorly, about two inches from its attachment to the vertebrae. (See x-ray cut.)

Beginning at the right upper extremity, there was noted wasting of the supra- and infraspinous muscles and also of the deltoid. The acromio-clavicular articulation was unduly prominent, likewise there was atrophy of muscles on the anterior humeral surface, especially of the brachialis anticus, with contraction of the biceps, causing the forearm to be flexed upon the arm at an angle of 40°. On the extensor surface, there was noted wasting of the triceps and of the extensor muscles of the back of the forearm, causing a peculiar flattening, as compared with the opposite arm and forearm. There was wasting of the muscles on the flexor surface of the forearm, and the wrist assumed the appearance of wrist-drop. Upon the dorsal surface of the hand, the tendons over the metacarpal bones were prominent, due to deep depressions between them; this depression was especially well marked between the first and second metacarpal bones. Upon the palmar aspect of the hand there was wasting of the thenar eminence, contraction of the second, third, fourth and fifth fingers between the first and second phalangeal articulations, and most prominent in the fourth and fifth fingers.

So far as movement was concerned, the patient could abduct the arm to a right angle with the trunk, but not to the same degree as on the unaffected side. Rotation of the shoulder could be fairly well accomplished; he could easily adduct the arm, and move it readily forward and backward, showing the integrity of the teres major, pectoralis major and latissimus dorsi muscles. He was enabled to supinate the forearm to the extent of 85°, and in doing this, the tendon of the biceps could be discerned in motion. The forearm could not be pronated, and by effort all that the man could accomplish was a position midway between pronation and supination. It was impossible for him to effect perfect flexion of the wrist on the forearm, but he could adduct the hand toward the ulnar side and then flex it on the forearm. This proved the flexor carpi ulnaris to be normal. He was unable to abduct toward the radial side, and then effect flexion of the hand or forearm, showing loss of power in the flexor carpi radialis. He could extend his hand to a plane on a level with the forehead, but he could not hyperextend it.

In studying motion in the hand, he could adduct the thumb but he could not abduct it; he was unable to flex the first phalanx on the first metacarpal bone, or the second phalanx of the thumb on the first phalanx of the thumb; nor could he bring the thumb toward the little finger, showing loss of power in the opponens pollicis muscle. Because of loss of power in the extensor longus and brevis minimi digiti, it was impossible to extend the little finger, although he could adduct that finger quite well. There was fairly good motion in the extensor indicis muscle. In the metacarpophalangeal articulations, there was power in the fourth and fifth,



Wound of Exit, Showing Comminuted Fracture of the Fourth Rib, Posteriorly.

very little motion in the third, and none at all in the second. In the joint between the first and second phalanx, there was a labored motion in the index and middle fingers, but the presence of very good movement in the ring and little fingers. In the joint between the second and third phalanx there was no motion in the index and middle fingers, some motion in the ring and little fingers. Extension of the fingers was possible because of beginning contractures at the joint between the first and second phalanx, most marked in the ring and little fingers.

From the history given by the patient, and from the neurological examination that he had undergone, the condition was diagnosed as one of laceration or division of the posterior cord of the brachial plexus, and it was thought best to suture the cut ends of the nerve and thus restore the continuity of the cord. Let it be remembered that the posterior cord of the brachial plexus lies behind the second portion of the axillary artery, the pectoralis minor dividing the axillary artery into three arbitrary divisions, the first portion of the artery above that muscle, the second part beneath the muscle and the third part below it. The posterior cord of the brachial plexus, after leaving the neck, passes behind the clavicle and the subclavius muscle, and latterly enters the axilla, being external to the first portion of the axillary artery or that portion above the pectoralis minor muscle. *In the second part of the course of the axillary artery, it completely surrounds that vessel, one cord lying upon the outer side, one upon the inner side, and one below it.* It is for the latter reason that ligation of the axillary in the second part of its course is held by many surgeons to be impracticable, impossible in many instances, and fraught with very great danger. It is for the same reason also that it is extremely difficult to reveal the posterior cord of the brachial plexus for the purpose of anastomosing its ends after traumatic division. In truth, many of the most recent works on surgery offer the statement that ligation of this part of the axillary is not even to be considered. After carefully weighing all the facts, however, it became apparent to the writer that he would violate precedent by making an avenue of approach through this forbidden path, and after numerous dissections and study one of three procedures presented itself for consideration: division of the clavicle, division of the pectoralis minor, or by operating through the axilla. The second of these, or division of the pectoralis minor muscle, was decided upon.

I made an incision six inches in length (15 cm.) and one and one-half inches (4 cm.) below the clavicle, separated the fibers of the pectoralis major muscle, and exposed the pectoralis minor, which was divided, and this brought into view the axillary artery, partly covered by the coracobrachialis muscle. Both of the latter structures were displaced outwardly by retractors, exposing the posterior cord of the brachial plexus. Instead of the cord being divided, I found it surrounded by inflammatory products. I thereupon freed it from surrounding structures; but no layer of fat was placed around the nerve—a procedure ordinarily intended to maintain the integrity of nerve tissue from adhesion to adjacent structures and vessels. The pectoralis minor muscle was then carefully sutured and the wound was closed and dressed. The progress of the case from that time forward was uneventful. A thorough examination two weeks later revealed sensation restored in all the previously affected areas, and the patient now has extensor power in the hand (showing muscle restoration), except for an atrophy of some of the interosseous muscles on the dorsal aspect of the hand. When first examined, it is worthy of remark, it was seen that there was total loss of power in the median nerve, some loss of power in the suprascapular nerve, and some involvement of the musculospiral and of the radial nerve.

In conclusion, I wish to express my thanks to Dr. H. C. Swartzlander for working up the case; and to Dr. A. M. Sharp for the neurological examination—both resident physicians at the Philadelphia General Hospital.

THE USE OF AND VALUE OF STATISTICS.

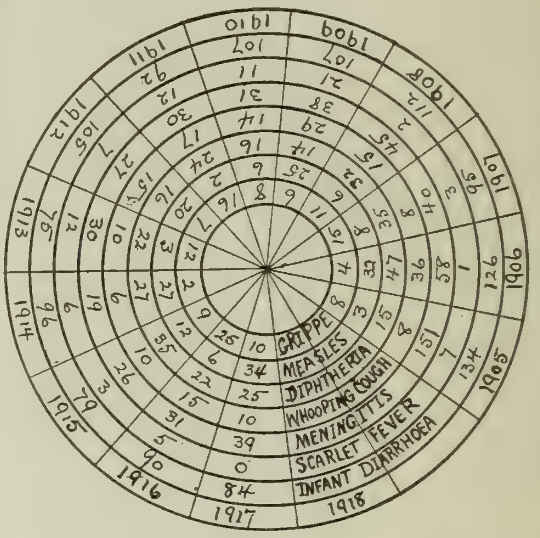
By D. M. Lewis, M.D., New Haven, Conn.,

Epidemiologist, Board of Health.

I believe that the universal detachment of statistics concerning diseases, especially of the communicable variety, in terms of prevailing circumstances and conditions, is perhaps the greatest factor in preventing the control of the diseases. I have shown that there is an unappreciated interlocking of the subject in investigations during 1916.[1]

Discussion of the introductory sentence may be well illustrated by two examples, both from a metropolitan city. During the latter part of the year past, statistics were published showing that the high cost of milk was responsible for a sudden high rate of infant diarrhea. With a sudden rise from a maximum of 71 weekly for July, the first week in August showed 225. The statistics showing a shortage of and a change to relatively poorer grades of milk among an investigated number of families gave evidence that this factor was the cause of the increased number of infant diarrheas. In itself there is an unfortunate absence of data of the investigations, as being in terms of those having diarrheas, as contrasted with those who did not and were not on a change of milk. The keynote is the following: statistics in terms of yearly and seasonal frequency would have brought out the following points. The sharp rise of 1917 was but one week later in time to a similar sharp rise in 1916, in turn paralleled by one in 1915. During then the months of August and September, with a maximum yearly in mid-August, the deaths in 1915 were approximately 50% greater than in 1916, and somewhat in excess in 1917 over 1915. On record that 1916 was their lowest for years, due probably to quarantine procedures for poliomyelitis; it is noteworthy that from mid-October, 1917, on, the weekly record was much better than that for 1916. Now, if we examine the weekly record of the deaths from each and every communicable disease for the three years, there may be found one other disease which is an exact parallel by weeks and by years, namely, whooping cough. The same statistics to explain whooping cough would be untenable. The second example is more recent, giving publicity to the fact that a higher rate for tuberculosis in 1917, after two lower years, must be referable to the food situation and a need for education as to better food ratios.

If now we examine the statistics shown by me in field work there is evidence that an epidemic of grippe is followed by a frequency of poliomyelitis and meningitis, then one of measles followed by diphtheria and whooping cough. Secondly, I can now show that the majority of the whooping cough cases were measles cases of the recent measles epidemic. Further, that the tuberculous meningitis under age five, in the majority of investigated cases, was the aftermath of a recent measles. Lastly, that a frequent finding was that the carriers of these diseases were cases of previous years, but at this time apparent cases of grippe. If we chart, then, our deaths from the communicable diseases for a period of years to reach a similar year period of an epidemic, they may be made in the form of a wheel of chance. With measles epidemic in this city in 1917, a similarly severe epidemic occurred in 1906. Having the fact that a frequency of grippe or influenza rather regularly preceded the measles waves, which confirmed my field observations, placing grippe as the hub and following it with measles, there was evident a wheel of certainty of the waves of infections, with one exception. The grippe figures for 1907 were too high or those for 1908 were too low. Examination of the deaths for those two years showed that 14 of the 15 in 1907 were over age 40, contrasted with 6 of the 11 in 1908. Inasmuch as pneumonia and influenza in the older generations were, and even now frequently are, synonymous, it is reasonable that the year with the greater proportion of deaths in children and young adults from the disease was the year of greater prevalence. With 1908 as the year of probable greater prevalence, there is a very regular sequence of grippe and meningitis, followed the following year by measles and diphtheria, whooping cough and infant diarrhea accompanying generally the measles. There is, then, more than a suggestive interlocking of dependency of the diseases; there is a use and a value which is prac-



tical. More than suggestive, also, are the results of such practical use as shown by the results in these diseases other than measles for 1917 in terms of prevailing previous waves of other years. There is evidence further that the control of respiratory diseases in general may be had on the same basis. In that failure to control such diseases represents one of the most important problems facing health authorities, I believe that investigation of similar statistics will give the essential basis for control of tuberculosis, for example, for the following reasons, as contrasted with the statistics of food ratios. During and following an epidemic of grippe, a board of health laboratory is flooded with sputum specimens showing streptococci and tubercle bacilli in previously latent or in early fresh suspected cases. Secondly, grippe on tuberculosis is notoriously fatal, as contrasted with uncomplicated tuberculosis, which is easily rendered latent. Thirdly, it may be that tuberculous meningitis and tuberculous pneumonia are the activation of a latent focus by measles. Such statistics offer wide opportunity for more good work by the statisticians of our insurance companies when properly carried out. Until so reasonable a lead is disproven, I believe that more enlightenment may be given the control of tuberculosis in terms of both past and present practice than by any statistics of varying conditions existing at any particular time in terms of personal surroundings.

It is said that we are in an age of reason. If tradition must go, it is possible that statistics based on reason may open up any and all previously unsolved problems.

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Society Report.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of Wednesday, January 2, 1918, at 8 o'clock. Dr. Thomas R. Neilson in the Chair.

ITALIAN MEDICAL ACTIVITIES IN THE WAR.

Dr. Victor G. Heiser, Director of the East, International Health Board; Member American Red Cross Commission to Italy: It is generally understood that the Italian Army consists of at least 4,000,000 men and that the number of hospital beds is approximately 1,000,000. Just what it means in two years to expand a country's hospital service to these huge proportions can be better appreciated when it is recalled that in the entire United States, with a population almost three times as great as that of Italy, there are only 300,000 beds. In spite of this vast achievement, the work accomplished by the Italian medical profession since the beginning of the war has attracted to itself but little attention in this country. While probably none of the Allies fighting in Europe has received less aid other than financial help from outside their own borders, the medical men of Italy almost invariably were loath to speak of their achievements. It was characteristic of the Italian medical service to achieve results and then, perhaps, talk about them. The equipment for the care of the sick and wounded has been provided almost entirely in Italy. Mobile hospitals of 100-bed capacity, which can be taken down and transferred 75 miles and set up and put in service again within 24 hours, are in use; the entire equipment being transported on five camions (motor trucks) and three touring cars. New operations, particularly in dental and lung surgery, new instruments without number, have been developed. The Italian medical service is presided over by an official who has his office with the Minister of War at Rome. Under the chief medical officer there is stationed with each army a principal medical officer who has almost determining powers in directing the medical work of the army with which he is stationed. The care of the wounded is undertaken jointly by the Italian Red Cross and the Sanitare Militare, or Army Medical Service, medical aid being rendered through the following seven classes of agencies:

1. The Posti Medicazione. These are the most advanced dressing stations for emergency service, and they are located usually in dugouts in trenches very close to the front.
2. The Sezione Sanita. These are located one or two kilometers behind the front, are dispensaries and more fully equipped than the preceding.
3. Ambulancia di Montagna are located from two to five kilometers behind the front; the most advanced point reached by the Italian Red Cross.
4. The Stazione di Sanita are somewhat larger and better equipped than the Ambulancia di Montagna.
5. The Ospedale di Campo, or Field Hospitals, are at accessible points somewhat farther back; of 500 bed capacity and are used also as distributing center where cases are classified and sent to various special hospitals.
6. Ospedale di Tappa are base hospitals several hundred kilometers behind the lines with a bed capacity of from 20,000 to 40,000.
7. Ospedale di Reservo are institutions throughout the cities of Italy which have been made available for soldiers.

For each army there are a number of large quarantine stations provided with steam disinfecting apparatus or sulphur-dioxide chambers. Every patient before admission to the general hospitals, and all prisoners, are passed through stations of this kind. Hospitals afforded by the Italian Red Cross consist largely of tourist hotels, schools and other buildings adapted to the purpose; those provided by the medical service consist of existing army hospitals, military buildings, or entirely new structures. The latter are usually one-story pavilions about 14 feet high, 18 feet wide, of any desired length, constructed of angle iron placed on 6-foot centers, with the intervening space filled in with hollow tile, resembling that used in fireproof construction in this country. The roofs are also of tile. They are cheaper than tentage, are cool in summer and can be kept warm in winter. The decreased use of cavalry has made available large numbers of cavalry barracks. In one of these at Udine a single ward has 300 beds. Hospitals are being located increasingly nearer the front and in most unusual places. Thirty or forty feet under ground and directly under a point where a battle was raging, it was a novel experience to see the hospital routine in good operating rooms and wards, supplied with artificial ventilation and modern hospital equipment. On the other extreme, at an elevation of 6000 feet in the Dolomites, we came upon a hospital of 30 bed capacity hewn out of the side of a cliff. The two sides and back wall were of stone, and the mountain range at this point was so narrow that through a hole bored in the back wall of the hospital it was possible to look into the Austrian trenches on the other side of the mountain. After receiving emergency treatment, patients were sent to the railhead on the marvelous *teleferica,* which often go from mountain-top to mountain-top over chasms thousands of feet deep.

Specialization has been carried to a high degree; at Udine we saw 1500 fracture cases in a single hospital; at other hospitals we saw only gunshot wounds of the chest. Professor Morelli has invented an improved aspirator for draining fluid from the chest. Pressure within and without the lungs can be accurately read on a gauge, and through the development of special technic, which, among other things, permits the lungs to remain collapsed during definite periods, he has been able to produce some startling results in lung surgery. In 100 recently completed cases there had been no mortality, and Professor Morelli believes it entirely feasible to keep the mortality well under five per cent. in all gunshot wounds of the chest.

Practically every hospital throughout Italy has one or more x-ray machines, all manufactured in their own country. The smooth organization of the hospital train service was one of the most striking features which we saw in Italy. Often we saw a train back into a sidetrack next to a hospital, take on board fully 350 wounded, and in less than thirty minutes proceed on its way. Everything worked with clock-like precision. One is particularly impressed by the amount of new apparatus invented to meet the needs of war cripples, and almost unbelievable progress has been made in appliances and methods for the reëducation of lost functions. Great stress is laid upon specialized forms of physical drill for rehabilitating nerve function, and remarkable results were shown us. Dr. Guali, at the Villa Fiore, has devised excellent improvements in artificial limbs, also a clever apparatus for registering the pressure of the artificial foot. At other institutions, a trade suitable to the individual patient is taught. Italy has established huge stations for the return of her soldiers from Saloniki and Albania. In view of 100,000 cases of malaria invalided back, the importance of such quarantine stations is manifest. A comparatively small amount of tuberculosis has been encountered in the Italian army, but it is said that 30,000 tubercular Italian prisoners had been returned from Austria. The x-ray diagnosis is a routine procedure in this disease. Among other activities with which the medical service is associated is an active reclamation department, which provides for the collection and repair of articles found on the battle field. The very general employment of huge fireless cookers assures to the soldier absolutely hot meals, in whatever position he is. Huge shops for repairing these cookers form part of the system. The prison camps at the front consist of barbed wire enclosures, with good tents and excellent cooking arrangements. They are divided into three sections: the first being that in which the prisoners are bathed, their clothing disinfected; in the second, stools specimens are taken for cholera, dysentery and typhoid. After three days those whose stools are negative are sent into the third section, where they stay until sent to the interior. For the officers, houses of a semi-permanent character are provided. One is greatly impressed by the kindliness and consideration shown prisoners of all classes. The food is the same as that given to the Italian officer or soldier of corresponding grade. No work is required of officers. No actual official records of venereal disease were available. The disease is stated to have been reduced to almost negligible proportions. A complete medical school has been established near the front line trenches. During the months when the army was comparatively inactive, all medical students in the service were ordered to San Giorgio di Nogaro, at which point professors from various medical schools who are in the army, also assembled, being assigned to look after the sick in the vicinity. This enabled them to use the clinical material for the benefit of the students. Finally, it may be stated, we were much impressed by the excellent care given the wounded, and the spirit of service manifested by the medical officers. They were on duty early and late, and a wonderful fellowship and mutual helpfulness prevailed.

Book Reviews.

Skin and Venereal Diseases. The Practical Medicine Series. Vol. IX. Edited by Oliver S. Ormsby, M.D., and James Herbert Mitchell, M.D. Series 1916. Chicago: The Year Book Publishers.

"The present volume is one of a series of ten issued at about monthly intervals and covering the entire field of medicine and surgery." This series is published primarily for the general practitioner, but at the same time the arrangement in several volumes enables those interested in special subjects to buy only the parts they desire. The volume strives to present as far as possible the more important yearly contributions to the knowledge of cutaneous medicine and genito-urinary diseases.

Clinical Lectures on Infant Feeding. Boston Methods. By Lewis Webb Hill, M.D., Junior Assistant Visiting Physician, Children's Hospital, Boston; Alumni Assistant in Pediatrics, Harvard Medical School. Chicago Methods. By Jesse Robert Gerstley, M.D., Instructor in Pediatrics, Northwestern University Medical School; Associate Attending Pediatrician, Michael Reese Hospital, Chicago. Philadelphia and London: W. B. Saunders Company. 1917.

During the summer of 1916 two courses of lectures and clinics on Pediatrics were given to the physicians of North Carolina under the joint auspices of the University of North Carolina and the State Board of Health. One of them was given by Dr. Lewis Webb Hill of Boston, the other by Dr. Jesse R. Gerstley of Chicago. Dr. Hill received his training in Boston, Dr. Gerstley in Chicago and Germany. Their points of view and their teachings on infant feeding and allied subjects are, therefore, quite different. They thought it worth while, for these reasons, to combine their lectures in one volume, so that the teachings of the two schools of infant feeding might be readily compared. They state in their preface that they are presented in a spirit of coöperation rather than of rivalry, and of construction rather than of destruction.

Both points of view are well presented. At the first glance they seem radically different, but more careful analysis shows that they are fundamentally much the same, and that many of the apparent differences are simply in the use of terms and in classification. Being a member of the "Boston School of Pediatrics," we naturally feel that the methods advocated by Dr. Hill for meeting the various problems presented are superior to those advocated by Dr. Gerstley, who represents another "School." We are inclined to think, however, that in actual practice, the methods adopted by the two would, in many instances, not be very different.

We are glad to see these different views presented together between the same covers and in such a friendly spirit. We also feel sure that if pediatrists would quarrel less and talk infant feeding over more in a mutual spirit of respect and tolerance, there would be found to be much less difference of opinion than there now appears to be, and that our knowledge of the subject would be materially advanced.

White and Martin's Genito-Urinary Surgery and Venereal Diseases. By Edward Martin, A.M., M.D., F.A.C.S., John Rhea Barton Professor of Surgery, University of Pennsylvania; Benjamin A. Thomas, A.M., M.D., F.A.C.S., Professor of Genito-Urinary Surgery in the Polyclinic Hospital and College for Graduates in Medicine, Instructor in Surgery, University of Pennsylvania; and Stirling W. Moorhead, M.D., F.A.C.S., Assistant Surgeon to the Howard Hospital, Philadelphia, Pennsylvania. Illustrated with 422 engravings and 21 colored plates. Tenth edition. Philadelphia and London: J. B. Lippincott Company. 1918.

The first edition of this book appeared over twenty years ago and was followed by eight others which answered the demands made for them from time to time. The present edition—the tenth—appears seven years after its immediate predecessor, and those years have proved years of great and varied progress in urological knowledge and attainment. The present book, dedicated to one of its original authors, Dr. J. William White, now dead, has been, therefore, practically rewritten to meet the changed conditions at this time.

Changes in the treatment of syphilis by the more modern methods have been thoroughly discussed and the authors' sensible and conservative ideas have been carefully and fully expounded. The modern laboratory knowledge pertaining to urological affections of all sorts has been incorporated into various sections of the book; and vaccines, renal tests, electrical treatment of bladder tumors, modern prostatic operations—are a few of the many more recent advances in urological knowledge which have been given thorough and prolonged consideration.

The book is the last word as a urological textbook at the present time. It contains much of Dr. Martin's charm as a writer of English, and is a most worthy successor to the volumes which preceded it. The publishers have produced the book in a manner worthy of its importance.

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THE CONTROL OF VENEREAL DISEASES IN MASSACHUSETTS.

"I began to be interested in the problem of venereal disease some thirty years ago, when I became convinced that the spread of sex diseases, if unchecked, would bring about the downfall of our race." With these words, Dr. Charles W. Eliot, speaking to the Committee on Public Health of the House of Representatives of Massachusetts, testified to his belief in the importance of the program set forth by the Massachusetts Board of Health. Army and Navy men, clergymen, representatives of the Federation of Women's Clubs and of the Massachusetts Medical Society, expressed their conviction that this program should be supported. The document upon which the hearing was held (House No. 1320), and which is published in part in another column of this issue of the Journal, provides for the appropriation of $30,000 for the establishment of new clinics or the support of those already established throughout the State for the diagnosis and treatment of venereal disease, for the education of the public in regard to these diseases, and for the printing of instruction sheets and blanks used in reporting such cases.

The campaign against syphilis and gonorrhea, planned by the Board of Health, is primarily a war measure, taken in accordance with the request of the National Committee of Defense. Slowly and unostentatiously, with a beginning which antedated the war, the foundation for this work has been laid. The situation created by the war—the very real danger to our troops from infectious sources outside the "safety" zone which surrounds each cantonment—has made possible the immediate launching of a far more ambitious campaign. The already partly dissipated mist of public prudery which shrouded this question has suddenly been swept away.

No medical man who has at heart the interests of public health can be opposed to a plan so comprehensive and at the same time so sane and moderate as this of the Board of Health. Whether it will succeed or not depends directly upon the whole-hearted coöperation of the medical profession. Here is an opportunity for service for those who are not in khaki or navy blue. "Before the war," said Dr. Eliot, "the incidence of venereal disease in the United States Regular Army was more than five times as great as that in the German Army. Must we admit that autocracy is more efficient than democracy?" The approval by the Legislature of this plan and the loyal support of its principles by the medical profession will go far toward demonstrating that in democracy lies the power to do great things.

* * *

IMMUNIZATION AGAINST TYPHUS FEVER.

Although the sanitary progress of most civilized communities has succeeded in eradicating many of the scourges still very common not so many years ago, most of these diseases, especially typhus fever, flourish under such adverse conditions as follow military or other devastations. In Mexico, and particularly in Serbia, until cleared by the American medical expeditions, there has been a great deal of this disease. The recent discovery that the so-called Brill's disease was but a milder type of typhus fever shows that the disease may still crop out anywhere. But there is no reason why these mild cases, if overlooked, cannot give rise to severe infections in others. The identity of the organism concerned in the causation of typhus fever was not known until the isolation of an organism from typhus cases occurring here, by Plotz, and named the Bacillus typhi exanthematici. However, before an organism associated with the etiology of a disease can be said to be the specific agent of that disease, it must carry out the requirements of Koch's postulate, that is, be isolated in pure culture, cause the disease when introduced into the organism and be recovered therefrom in pure culture. Besides, the natural sequence of the discovery of what is believed to be the specific organism in a disease is the attempt to produce immunization against the disease and its treatment serologically. To this end the experiments carried out by the Hygienic Laboratory are interesting, but they do not determine whether this organism is the sole specific cause of typhus, even though it is isolated from the blood of typhus cases. The experiments represented four strains of the Bacillus typhi exanthematici taken from cases of Mexican typhus. Living and dead organisms were injected into rhesus monkeys—into half of the monkeys in the experiment were injected the living, and into the other half the dead, organisms. It was found that neither the dead nor the living organisms caused any reaction in the monkeys. The injections were made intraperitoneally at suitable intervals, and after about 12 days injections of virulent typhus blood were made into vaccinated and unvaccinated animals, the latter as controls. In most of the vaccinated animals the typhus reaction, while present, was somewhat later in arriving than in the unvaccinated ones, although what significance, if any, this fact has, is hard to say. The control, unvaccinated, monkeys, however, reacted quickly to the typhus virus, while the known immune animals did not react at all to the virulent typhus blood. (Public Health Reports, June 1, 1917.) Nevertheless, the failure to produce immunity with an organism about whose specificity there is no doubt, is not unusual, especially where there is a number of strains that enter into the etiology of a disease, as is the case with typhus fever. Wherever there is a number of strains concerned in the causation of a disease, failure is naturally very likely to occur unless the exact strain of organism is employed in the production of vaccines or sera that is concerned in the causation of the particular disease case in question.

MEDICAL NOTES.

SUPPLEMENTARY LIST OF MASSACHUSETTS PHYSICIANS IN THE SERVICE OF THE ARMY, NAVY AND RED CROSS UP TO MARCH 1, 1918.

(Original list published in the Journal of March 14, 1918, compiled by the Massachusetts State Committee, Council of National Defense, Medical Section, of those who had accepted commissions previous to Feb. 1, 1918.)

* Honorably discharged.

† Honorably discharged to enter Regular Army Medical Corps.

Akerly, Arthur W. K.	Boston
Ayer, James B.	Boston
Balch, Franklin G.	Boston
Barrow, Allen R., Naval Reserve	Chelsea
Berry, Frank B.	Cambridge
Blair, Orlando R., Navy	Springfield
Blood, George W.	Fall River
*Browne, William E.	Boston
Burke, John R.	Boston
*Byrne, William R.	Framingham
Chalfen, Samuel E.	Cambridge
Clark, Millard C.	Lawrence
Cline, Samuel, Naval Reserve	Roxbury
Corcoran, George B., Naval Reserve	West Sp'fl'd.
Cox, Thomas	Fall River
Crofton, George H.	Worcester
Crothers, Bronson	Cambridge
Curran, George L.	North Adams
Dalton, Stephen J.	Marlboro
*Davis, Charles H.	Hamilton
*Dillenback, Emil U.	Springfield
Donovan, Jeremiah J.	Roslindale
Doucet, Charles S.	Lowell
Dwyer, John E., Jr.	Cambridge
Falk, Jacob B.	Boston
Fennessey, John F.	Dorchester
Fogg, Neil Augustus	Boston
French, Leland M., Naval Reserve	Worcester
Galvin, Augustus H.	Springfield
Gillespie, Norman W.	Boston
Godvin, Bernard A.	Boston
Goodpasture, Ernest W., Naval Res.	Boston
Gray, Horace	Boston
Hamilton, Albert J. A., Naval Res.	Boston
Hardy, Wilbert C.	Boston
Harriman, Frank E.	Worcester
Healy, Thomas R., Naval Reserve	Newburyport
Hoffman Morris	Boston
Hodgkins Edward M.	Dorchester
Hubbard, Joshua C.	Boston
Ireland, Allen G., Naval Reserve	Arlington
Jacobson, Victor C.	Boston
Jennings, Curtis H., Naval Reserve	Fitchburg
Joslin, Elliott P.	Boston
Kau, En Young	Boston
King, Alfred E.	Watertown
Lacey, Walter H.	Boston
La Liberté, Elie J.	Fall River
Lanman, Thomas H.	Boston
LeClair, Hormidas H., Naval Reserve	New Bedford
Lyon, Arthur B.	Boston
McCann, Charles D.	Brockton
McConnell, David J.	Greenfield

Medalia, David B.	Boston
Meserve, Edwin A.	Watertown
Milot, Joseph D.	Fall River
Morse, Almon G.	Hingham
Moulton, Allen T.	Roxbury
NEWTON, WILLIAM C., Naval Reserve	Revere
Osborn, Stanley H.	Cambridge
Park, James H., Jr.	Boston
Pastene, Albert A.	Boston
PAYNE, JAMES H., Navy	Boston
Pratt, Ezekiel	Arlington
Putnam, James J., Jr.	Boston
QUIRK, THOMAS C., Naval Reserve	Watertown
Rafferty, Thomas B.	Lynn
†Randall, John A.	Myricks
RIORDAN, ARTHUR H., Naval Reserve	Indian Orchard
Roderick, Anthony J.	New Bedford
Rudman, Israel E.	New Bedford
Sargent, Arthur F.	Boston
*Segal, Joseph	Jamaica Plain
*Shepley, Luther J.	Fall River
Shortell, Joseph H.	Boston
Smith, Alfred C.	Brockton
Smith, Ernest E.	Webster
Solomon, Harry C.	Jamaica Plain
Sowles, Horace K.	Boston
Stack, John J.	Boston
*Sweeney, John G.	No. Cohasset
Swope, Oscar C.	Kingston
Thomas, Abraham F.	Newburyport
Thomas, Harold	Wollaston
Tomb, Everett H.	Cambridge
TRICKEY, CHARLES T., Naval Reserve	Tewksbury
Turner, Ralph W.	Boston
Van Camp, Thomas H.	Boston
Walker, Harry A.	Somerville
Ward, John C.	Worcester
Wickham, Thomas W.	Boston
Willey, Walter B., Jr.	Brighton
Woody, McIver	Boston
Worthington, Arthur M.	Dedham

Bulletin of the Canadian Army Medical Corps.—The Bulletin of the Canadian Army Medical Corps, a new medical paper issued from the office of the Dominion Medical Service, has just appeared, and promises much interest. The issue for March contains original articles chiefly concerning the diseases most prevalent in the war, a report of the proceedings of Clinical Societies of the C. A. M. C., administrative notes, and Corps news.

Major J. D. Morgan contributes an article on "Spur-like Formations of Bone Following Amputation"; Major F. B. Bowman describes a new disease known as "Trench Mouth"; Major I. J. Rhea and Captain R. H. Malone present "Studies on Streptococci Recovered from Sick and Wounded Soldiers in France"; Captain A. B. Jackson treats of "The Importance of the Early Diagnosis of Syphilis"; Captain A. B. James has written an article on "An Abortive Treatment for Gonorrhea."

Plague in Nankin.—Report from Pekin, Thursday, March 21, states that fifteen deaths from the plague have occurred at Nankin, China.

WAR NOTES.

Camp Health Better.—Continued improvement of health conditions in the Army camps and cantonments in the United States is shown in the report of the Surgeon-General for the week ending March 1. The death rate—6.6 per 1000—is the lowest recorded since Nov. 16, 1917. Pneumonia continues to decline in all the camps.

Woman Physician is Appointed to Service in France.—Dr. Alfreda B. Withington of Pittsfield, a practising physician of that city for the past twenty years, is to enter active service under appointment of Major Grayson M.-P. Murphy, former head of the French Red Cross Commission, and will report for duty in France in connection with tuberculosis work carried on under the combined auspices of the Red Cross and the Rockefeller Foundation. She expects to sail shortly.

Dr. Withington for years has been secretary-treasurer of the Red Cross in Berkshire County and active in keeping its appeals before the public. Through her leadership many thousands of dollars have been raised in western Massachusetts for Red Cross work.

Dr. Withington from the beginning has been identified with the Pittsfield Anti-Tuberculosis Association, which maintains a tuberculosis camp in West Pittsfield. She has been on the hospital staff of the House of Mercy since 1902, and is a member of the Berkshire County Medical Society. Her specialization in tuberculosis practice equips her for the service abroad—a service that is growing in importance with the development of the war. She served for one season (1907) with Dr. Grenfell in Labrador.

A graduate of Cornell University, where she took a post-graduate course, and of the Woman's Medical College in New York, Dr. Withington later took special courses in the hospitals in Prague and Dresden.

Medical Awards of the Victoria Cross.—Announcement is made of the following awards of the Victoria Cross to medical officers in the British Service:

"Capt. Noel Godfrey Chavasse, V.C., M.C., late R.A.M.C., attd. L'pool R.

For conspicuous bravery and devotion to duty when in action.

Though severely wounded early in the action whilst carrying a wounded soldier to the dressing station, Capt. Chavasse refused to leave his post, and for two days not only continued to perform his duties, but in addition went out repeatedly under heavy fire to search for and attend to the wounded who were lying out.

During these searches, although practically without food during this period, worn with fatigue and faint with his wound, he assisted to carry in a number of badly wounded men, over heavy and difficult ground.

By his extraordinary energy and inspiring example, he was instrumental in rescuing many wounded who would have otherwise undoubtedly succumbed under the bad weather conditions.

This devoted and gallant officer subsequently died of his wounds."

"T. Capt. Harold Ackroyd, M.C., M.D., late R.A.M.C., attd. R. Berks R.

For most conspicuous bravery. During recent operations Capt. Ackroyd displayed the greatest gallantry and devotion to duty. Utterly regardless of danger, he worked continuously for many hours up and down and in front of the line, tending the wounded and saving the lives of officers and men. In so doing, he had to move across the open under heavy machine gun, rifle and shell fire. He carried a wounded officer to a place of safety under very heavy fire. On another occasion he went some way in front of our advanced line and brought in a wounded man under continuous sniping and machine-gun fire.

His heroism was the means of saving many lives, and provided a magnificent example of courage, cheerfulness, and determination to the fighting men in whose midst he was carrying out his splendid work.

This gallant officer has since been killed in action."

The following award of the Albert Medal is also announced:

"The King has conferred the Decoration of the Albert Medal on Surgeon Probationer Robert Sydney Steele Smith, R.N.V.R., in consideration of the gallant services rendered by him. He was medical officer of one of H.M. ships which was torpedoed by an enemy submarine. When the enemy torpedo struck the ship Surgeon Probationer Smith was in the wardroom aft with the 1st Lieutenant. The explosion wrecked the wardroom and rendered the 1st Lieutenant unconscious. All other exits being blocked, Surgeon Probationer Smith piled the wrecked furniture under the skylight, and got the 1st Lieutenant through this on deck. He then attended to a petty officer who was lying on deck with a broken arm and leg, adjusted and blew up his life-belt, and after doing the same for the 1st Lieutenant, got him overboard as the ship was then foundering. The 1st Lieutenant was by then partly conscious, but was again stunned owing to an explosion when the vessel foundered, and when he was picked up by the boat he was apparently dead. Surgeon Probationer Smith applied artificial respiration until the 1st Lieutenant showed signs of life; he afterwards attended to the injured in the boat so far as circumstances allowed, until they were picked up 43 hours later."

War and Birth Rate.—For the past four weeks the natural increase of population—the excess of births over deaths—in London has stopped. Last week, according to the Registrar-General, the deaths numbered 1804 and the births 1491, an excess of 313 deaths. In Germany the population figures show a serious death rate. According to the latest published by the Registrar-General, only 282 children were born in Berlin during one week, while 451 people died. In Hamburg the deaths were thrice the number of births, and, taken together, Berlin, Hamburg, Leipzig, Cologne, Dresden, and Breslau show twice as many deaths as births.

Declining Birth Rate in Scotland.—The Registrar-General for Scotland, in his quarterly report, states that the births of 26,172 living children were registered in Scotland during the second quarter of the year 1917. These births are 804 more than in the previous quarter, but 3756 fewer than in the second quarter of 1916. It is the smallest number of births registered in any second quarter since 1856. The birth rate for the quarter is 21.6 per thousand, being 0.4 above that for the previous quarter, but 3.4 below that for the second quarter of 1916, and 5.1 below the mean of the rates for the corresponding quarters of the past five years. With the exception of the fourth quarters of 1915 and 1916, and the first quarter of this year, it is the lowest quarterly birth rate ever recorded in Scotland. Of the 26,172 children whose births were registered, 13,312 were male, and 12,860 female, the ratio of male to female births being thus 103.5 to 100. In the previous quarter this ratio was 106.7, and in the second quarter of 1916, 105.7.

Harvard Men in Ambulance Work.—Harvard has a wide lead over all other colleges in the membership list of the American ambulance field service when it was formally taken over by the United States Army recently. Of the 1890 college men who served as ambulance drivers, Harvard provided 311. Yale was second, with 192 and Princeton third with 190. Dartmouth came fourth with 122 men, and Technology furnished 39.

Meeting of the German Medical Association.—The first general meeting, since the war, of the German Medical Association, was held in Leipzig on September 22 and 23, 1917. It was stated that about 24,000 German doctors were engaged on war work, and that about 1000 had fallen in the field. The attacks of the insurance societies on the medical profession, and the prospect of loss of independence by the adoption of a state medical service were discussed. Bitter conflicts with the insurance societies after the war were foreshadowed. With regard to the establishment of dispensaries for the treatment of venereal disease, it was agreed that the medical profession should be adequately represented. Unanimity was also shown in a resolution calling for higher remuneration in every branch of the medical profession, in view of the depreciation of the currency.

Birth Rate in Germany.—Statistics for the year 1916 of the twenty-six German towns with a population of over 200,000 each show a decline of 38.3% in the birth rate as compared with 1914. The figures for August and September, 1916, were, however, better than for the preceding July, a result, it is supposed, of the facilities given to soldiers for Christmas leave.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending March 30, the number of deaths reported was 250, against 277 last year, with a rate of 16.62, against 17.86 last year. There were 35 deaths under one year of age, against 44 last year.

The number of cases of principal reportable diseases were: diphtheria, 100; scarlet fever, 27; measles, 227; whooping cough, 53; typhoid fever, 1; tuberculosis, 57.

Included in the above were the following cases of non-residents: diphtheria, 35; scarlet fever, 4; measles, 2; tuberculosis, 9.

Total deaths from these diseases were: diphtheria, 1; scarlet fever, 1; measles, 8; whooping cough, 3; tuberculosis, 18.

Included in the above were the following non-residents: diphtheria, 1; scarlet fever, 1; measles, 2; tuberculosis, 2.

Dispensary Fund above $52,000.—The Boston Dispensary has raised more than the necessary fund, according to figures reported by the campaign committee. At least $51,000 have been secured in cash and pledges, and there are many subscriptions of small sums yet to come in. It is probable that the fund may reach $60,000 or more when the final figures are prepared.

Hospital Bequests.—The will of the late Zabdiel Adams Willard of Brookline, Mass., was filed on March 20, for probate in the Norfolk County Court at Dedham, Mass. After providing for several personal beneficiaries, the will assigns one-quarter of the income and ultimately of the principal of the residuary estate, each to the New England Hospital for Women and children, and to the Boston Dispensary.

By the will of the late Henry A. Willis of Fitchburg, the Burbank Hospital receives the sum of $10,000 to establish free beds in the donor's name.

The will of the late Miss Adele G. Thayer of Boston makes a bequest of $25,000 to the Convalescent Home of the Children's Hospital in Wellesley, and also one of $10,000 to the Children's Hospital.

By the recently probated will of the late Mrs. Anna W. Sanborn of Boston and Rockport, the Floating Hospital, Boston, receives $300; the L. M. Haskins Hospital of Rockport receives $300 also.

Dr. John A. Gordon of Quincy makes a bequest of $2000 to the Quincy City Hospital; the Harvard Medical alumni fund receives $200, also the Quincy Day Nursery.

Associated Health Boards Dine in Lynn.—The Associated Boards of Health of the Northeastern District of Massachusetts held their annual meeting recently at the Hotel Seymour in Lynn. Mayor Creamer; Dr. Fritz B. Talbot, appointed a short time ago to the commission for conservation of child life; Dr. Lyman A. Jones, of the State Department of Health; and Dr. John S. Hitchcock, of the Department of Communicable Diseases, were the speakers.

The following officers were elected: President, Dr. George B. Fenwick of Chelsea; vice-president, Dr. George F. Lennon of Haverhill; secretary and treasurer, Dr. Clarence W. Horton of Swampscott; directors, Dr. Walter W. Kingsbury of Malden, Dr. J. A. Jonness of Rockport, and Dr. Loring Grimes of Swampscott.

Reports of Baby Hygiene Association.—Reports of the work done by the Baby Hygiene Association for the year 1917, presented by the director, Dr. J. Herbert Young, at a recent meeting of the trustees, showed that 55,721 babies were cared for, compared with 49,532 in

1916, an increase of 10%. With one exception, all stations began the present year with a larger registration than previously.

"The number of visits of babies to conference was 31,631, an increase of 14% over 1914, notwithstanding an increase of 4% in number of conferences held. A comparison of the years 1915 and 1917, shows in 1917 an increase in number of babies cared for of 16%, in conference attendance 24%, and nurses' visits 29%. This demonstrates that medical and nursing supervision is more than keeping pace with growth.

The number of babies cared for up to their first birthday has been increased over last year, and the average length of supervision was seven months. As the aim of the Association is not to treat sick babies but to keep babies well, the steady fall in morbidity is most gratifying."

Essex County Tuberculosis Hospital.—It is announced that work is well in progress on the new Essex County Tuberculosis Hospital, which is under construction at Middleton, Mass. This hospital, which is being built in accordance with legislative enactment, will have the expense of its construction and maintenance proportionately borne by all the cities and towns of Essex County, with the exception of Haverhill, Lawrence, Lynn, Newburyport, and Salem, which have already made separate provision for the care of their consumptives.

"The building, which will not be completed before fall, will be 780 feet in length, and is divided into a central section and two wings. The wings are for patients, and are each 317 feet long. The administration building is in the front center, and is 60 by 45 feet. Back of that is the dining-room, 40 by 47 feet, with seating capacity for 112 persons. Still further back is the service building, 40 by 60 feet, where will be located the kitchen, bakery, cold storage plant and other annexes of public institutions, and in the upper story the dormitories for the female help.

On the first floor of the administration building will be located the staff offices with the staff bedrooms on the second floor and the nurses' rooms on the third floor. There will be 104 beds in the two dormitories for patients. Additions can be made if necessary in the future.

The building will be of hollow tiles and stucco with slate roof.

The first floor is at an elevation of 176 feet above sea level, while the hill in front of the hospital is 220 feet elevation, and is crowned with a pine grove."

Diphtheria at Wakefield.—Report from Wakefield on March 25 states that within the preceding ten days 14 new cases of diphtheria were discovered in that town, and that three have already proved fatal.

Plans for Crane Sanatorium.—It is announced that the attempt will be made to raise a fund of $100,000, of which $20,000 have already been subscribed, for the completion of the Crane Sanatorium at Rutland, Mass., whose foundations have already been laid. It is intended that this sanatorium shall be administered without profit. Contributions for the fund may be sent to Leonard W. Cronkhite, Merchants National Bank, Boston.

NEW ENGLAND NOTES.

Hospital Fire at Middletown, Conn.—A fire in the west wing of the Connecticut Hospital, at Middletown, Conn., resulted in the death of two patients, with two others missing. The damage to the building is estimated at about $200,000.

Control of Disease in Penal and Charitable Institutions in Rhode Island.—On March 8 the following act in amendment of the existing "Act to Provide for the Supervision, Administration, and Control of Charitable and Penal Institutions" was passed by both branches of the Rhode Island General Assembly. The amendment consists in the addition of Article 4, entitled "Of the Public Health."

"Section 1. In exercising the power and authority to provide for the care of the physical welfare of the inmates, prisoners, patients, and pupils in the several institutions under its control, and for the protection of the public health, the Penal and Charitable Commission shall furnish all necessary medical aid and attention, and shall take all necessary steps to promote the health of said inmates, prisoners, patients, and pupils, and especially to guard them and the general public against all dangerous, infectious and contagious diseases at said institutions.

Sect. 2. The said Commission is hereby authorized and directed, by the attending physician at any of said institutions or by such other physician as it may from time to time designate, to use every available means to ascertain the existence of any dangerous, infectious or contagious disease, including syphilis in the infectious stages and gonococcus infection, among the inmates, prisoners, patients and pupils of said institutions, and to make examination of any of them suspected of having syphilis in the infectious stages or gonococcus infection, and immediately to investigate the source of such infection, and if ascertained, to report the same to the State Board of Health; and any person committed to or received into any of said institutions by, through or under any order of court or any process of law shall be deemed to be an inmate, prisoner, patient or pupil of such institution, as the case may be, within the provisions of this article.

Sect. 3. Every inmate, prisoner, patient or pupil in any of said institutions, who is afflicted with any dangerous, infectious or contagious disease, including syphilis in the infectious stages and gonococcus infection, shall be forthwith placed under medical treatment, and if in the opinion of the attending physician it is necessary, shall be isolated until danger of contagion has passed or until the attending physician determines that further isolation is unnecessary; and if danger of contagion shall not have passed or if further isolation is still necessary at the expiration of sentence or at the time for discharge or release from such institution, such afflicted inmate, prisoner, patient or pupil shall be detained in such institution and continued under medical treatment until the attending physician shall determine that his discharge or release from such institution will not endanger the public health; and during such period of detention, the person so detained shall be supported in the same manner as before such detention.

Sect. 4 provides full powers for the commission in carrying out the preceding sections.

Sect. 5 provides for the keeping of records for statistical purposes.''

The passage of this act may be regarded as an advantageous step in the progress towards the intelligent treatment and control of infectious diseases in public institutions.

Obituary.

WILLIAM ALOYSIUS DUNN, M.D.

Dr. William A. Dunn, for many years a resident of Boston—surgeon, traveler, linguist and recipient of many honors in foreign lands, among them the decoration of knight commander of the Order of Gregory the Great from Pope Pius X—died March 28, 1918, in New York City. Born in the North End, Boston, in 1852, he was graduated as a Franklin medal scholar from the Eliot school at the age of thirteen. He went to Boston College, where he was graduated with the degrees of A. B. and A. M. He was graduated from the Harvard Medical School with high honors in 1875.

Going to Europe he took special courses in medicine and surgery at Paris, Berlin, Vienna and Dublin. On his return Governor Ames appointed him a trustee of the Institution for the Feeble-Minded. He became a surgeon at the Carney Hospital, for six years was a member of the school board and for five years a trustee of the Boston City Hospital. He was first professor of chemistry at Boston College and afterward gave a course there on physiology. During his residence in Boston he was prominent in social and fraternal circles. He was one of the founders of the Clover Club and a member of the Puritan and Algonquin clubs, Boston Athletic Association, University Club, Boston College Alumni Association, Catholic Union, the Boston Medical Observation Society, Boston Medical Improvement Society, American Medical Association, Association for the Prevention of Tuberculosis and the Massachusetts Medical Society.

Miscellany.

THE CONTROL OF VENEREAL DISEASES IN MASSACHUSETTS.

In another column of the present issue of the Journal is published an editorial comment on the hearing recently held with reference to a Legislative message (House No. 1320) from Governor McCall, transmitting a communication from Dr. Eugene R. Kelley, relative to the control of venereal diseases in Massachusetts. This document is of such interest and importance as to deserve publication in part as follows:

''I am transmitting herewith, with the request that you give it your careful consideration, a communication which I have received from the State Department of Health relative to venereal diseases.

In addition to the plans for medical work outlined in the enclosed letter, I suggest that you give consideration to the program upon this subject recommended by the Federal Government, which has the endorsement of the Massachusetts Committee of Public Safety and our State Department of Health. This recommendation appears to be based on an urgent appeal from the War and Navy Departments, whose representatives have investigated conditions in certain cities and towns in the Commonwealth.

The subject certainly demands a painstaking investigation and proper action, to the end that the spread of loathsome diseases and open commercialized prostitution may be stopped. In this connection I call your attention to the report of the 'Commission for the Investigation of the White Slave Traffic, so-called,' filed with the General Court of 1914, (House document No. 2281 of the year 1914),—a report which for some reason was not acted upon by the Legislature at that time. I would suggest that it be taken from the files and again considered by you in the light of existing war conditions. I believe it will be well to secure the coöperation of all boards of trustees and superintendents of state institutions in the study of the problem, with a view to its solution in a way that will promote the welfare of their inmates.

The old-time attitude which forbade reference to venereal diseases outside of medical circles and technical literature seems to be no longer tenable. These diseases increasingly sap the very sources of national life and efficiency. They should be fought openly, courageously and sanely. In times like these it surely is incumbent upon the nation to take all possible measures to achieve maximum physical, mental and moral efficiency. The objection on account of the inadvisability of expending additional public money for any purpose not bearing upon the efficient conduct of the war is inapplicable. The expenditure of money can be justified strictly on the war efficiency aspects of the subject.

In connection with this suggestion I would call your attention to the following conclusion of the British Royal Commission on Venereal Diseases, arrived at following an exhaustive study of the problem of Great Britain after two years of war:—

'The conditions now existing and those which must follow on the conclusion of the war imperatively demand that action be taken without delay. We realize the claims of economy at the present moment, but we believe that all necessary expenditure will be recouped by the results which can be obtained. . . no short-sighted parsimony should be permitted to stand in the way of all the means that science can suggest and organizations can supply for guarding present and future generations upon whom the restoration of national prosperity must depend.'

I recommend that you appropriate not less than thirty thousand dollars to be expended by the State Department of Health, subject to the approval of the Governor and Council, for the control, suppression and treatment of venereal diseases. Samuel W. McCall."

The following represents a part of the material contained in the communication from Dr. Kelley, transmitted by the Governor with his message to the Legislature:

"The War and Navy Departments, the Council of National Defense and the U. S. Public Health Service have jointly urged upon the several states the necessity of inaugurating comprehensive campaigns against venereal diseases as a matter of national efficiency. Federal authorities have pointed out that in order to secure the greatest number of effectives in the selective draft the prevalence of venereal diseases must be materially reduced.

Special efforts directed towards the suppression of venereal disease in the civilian districts contiguous to military camps are necessary to protect the soldier from the danger of venereal infection. The success already attained by the Federal authorities in this direction has been most striking. However, the most successful measures instituted and maintained in any such restricted zone will not entirely protect the soldier and sailor because leaves of absence present opportunity to go beyond the limits of these zones to large cities. Here again necessity demands concerted effort to reduce the venereal infections throughout the entire civilian population.

Facts are now available which demonstrate that the greatest problem of military efficiency in reference to venereal disease is no longer, if it has ever been, the problem of the soldier and sailor already in service. Venereal diseases still occur to a regrettable extent among our military forces, but the routine examinations carried out under the Selective Service Law reveal the astonishing and alarming fact that these diseases prevail among our male civil population of military age to a degree far in excess of their prevalence among the military population.

The prevalence of venereal disease in the civil population must be greatly lessened if we are porperly to conserve our man power for combatant service and maintain our industrial supremacy. Industrial efficiency is as important in modern warfare as military efficiency—hence the great military importance of reducing venereal disease prevalence in our industrial and civil population generally.

Totally aside from its military aspects, many other reasons are apparent for a vigorous attack upon this problem. The tremendous economic loss in caring for crippled, blind and insane, the effect of these diseases upon infant mortality, their fearfully depressive effect upon the birth rate, the enormous innocent invalidism of women which they produce, and the need of proper protection of future generations, all demand immediate concerted action throughout the Commonwealth and the Nation.

Massachusetts has already put into effect many of the essential anti-venereal measures outlined by the Federal authorities. It is also true that many of our sister states have done the same and in certain important features made much greater provision, particularly financial provision, for these measures than we have as yet.

For some time past the State Department of Health has been perfecting and gradually carrying out a comprehensive plan for the control of venereal diseases in this Commonwealth. This plan is in line with recommendations since made by the Federal Government. Free laboratory facilities for the diagnosis of syphilis and gonorrhea became generally available with the establishment of the State Wassermann

Laboratory in June, 1915; for the past two years, under authority of a Legislative resolve, the Department has been experimenting with the manufacture of salvarsan, and has now succeeded in producing an unusually pure type of a substance analogous to salvarsan, known as 'arsphenamine.' This substance is now being manufactured upon a factory scale, the output being at the present time about 2,000 doses a month. In December, 1918, the State Department of Health declared syphilis and gonorrhea diseases dangerous to the public health and hence reportable, commencing February 1, 1918. An extensive educational campaign regarding the dangers of venereal disease is being carried on not only in the civilian population but among the military as well, by means of lectures, lantern slides, pamphlets, etc. A health exhibit is also being planned pointing out the menace of venereal disease. A bill introduced by this Department is now under consideration by the Legislature, which forbids the sale or distribution of drugs for the cure or alleviation of venereal disease except upon the prescription of a registered physician. If passed, this bill will put a stop to the widespread and vicious practice of drug-store prescribing for venereal diseases, which means that the infected individual goes away with a false sense of security and becomes a more serious menace than before to all with whom he comes in contact. It has the further result of deferring proper treatment in many of these cases until the time has passed when such treatment can be effective.

The Department has formulated a definite and carefully considered plan for the establishment and maintenance of sixteen venereal disease clinics in thirteen of the largest centers of population throughout the State, as shown by the attached map. These centers will serve as distributing centers for arsphenamine and will provide free, or at a very low cost, facilities for the diagnosis and treatment of venereal diseases, within easy reach of all residents of Massachusetts in need thereof. As an educational and protective force the value of these dispensaries could not be overrated. City governments are already establishing such clinics.

Plans for providing adequate hospital facilities for cases needing hospital treatment are also under consideration.

Briefly, then , there are now available in Massachusetts (1) machinery to give definite knowledge of the number and location of cases of venereal disease in the State, (2) free facilities for the diagnosis and treatment of venereal disease, and (3) a *plan* for the establishment of venereal clinics, the consummation of which will place these facilities in easy and immediate reach of all requiring them.

The carrying out of this plan, however, requires money. It would hardly be fair to expect the cities in which dispensaries are to be located which will serve not only that city but an extensive area besides, to pay the full costs of maintaining such clinics. It is, therefore, hoped that it will be possible for the Commonwealth to contribute to the support of each of these dispensaries to the extent of $1,000 a year. The payment of such a sum by the Commonwealth will serve a twofold purpose: It will give this Department the right to control the distribution and administration of arsphenamine,—a product highly toxic and requiring careful handling,—and it will practically give the Department the power of licensing these dispensaries, since in order to receive the $1,000 and the State arsphenamine, it will be necessary for the dispensary to conform with the minimum rules and regulations formulated for venereal clinics.

It is not intended at this time to request an appropriation sufficient for the creation of a Division of Venereal Diseases. By special effort it will be possible to carry on a large part of the purely communicable disease phase of the work in the present Division of Communicable Diseases, with the Division of Hygiene providing for the carrying out of the educational campaign. It is urgently and absolutely necessary, however, if this work is to be carried on—and surely its importance and value are obvious to all—that the sum of $30,000 be made available.

Primarily, the purpose of this expenditure is to diminish the prevalence of gonorrhea and syphilis, two diseases the results of which now impose a direct cost upon the State of not less than half a million dollars annually and an indirect financial and social burden upon the counties and cities and towns which is incalculable but may be very conservatively estimated to represent in the aggregate millions of money, hundreds of lives and hundreds of thousands of lost days of productive labor annually in the Commonwealth. The sum of $500,000 referred to represents the expense of caring for that portion of our insane asylum population whose insanity is directly and solely due to syphilis. All such cases are now preventable if the disease is recognized early and thoroughly treated by modern methods such as the State Health Department's program contemplates.

The procedure as outlined is believed to be the most directly practicable method for the State to cut down the toll of these diseases, because from their peculiar character they, more than any other communicable diseases, can best be prevented by prompt, early discovery, and proper and thorough treatment. By this means, the opportunities for those already infected to spread the disease can be eliminated, and in many instances they can be completely cured and thus be restored to a basis of self-supporting and useful members of society; all of which in the long run means a great financial as well as an economic and moral gain for the Commonwealth.

In view of the magnitude of the venereal disease problem this request for $30,000 is a most modest one, but its significance will be great. The establishment of the venereal disease clinics for which it will be largely used forms a vital part of the program instituted by this Department for the control of venereal disease. The success or failure of this program will be largely dependent upon the establishment and efficient operation of these dispensaries. Therefore I have the honor respectfully to request that Your Excellency make this communication the basis of a special message to the Legislature, advocating the appropriation of the sum of $30,000 for the purposes above described."

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NEUROLOGISTS AND PSYCHIATRISTS FOR THE MEDICAL DEPARTMENT.

The two following self-explanatory letters are published herewith, since they seem to deserve the widest publicity, and it is desired that they should come to the attention of practitioners not connected with the Boston Society of Neurology and Psychiatry, to which they were originally presented.

War Department, Office of the Surgeon General,
Washington, March 5, 1918.

Dr. C. L. Dana,
National Committee for Mental Hygiene,
50 Union Square, New York City.

Dear Doctor Dana:—

The Surgeon General directs me to write you again concerning neurologists and psychiatrists for the Medical Department. As explained to you previously, the Surgeon General has now great need of men of experience, of maturity and standing for these positions. We have plenty of young men and shall doubtless get more all the time, but we are very deficient in the older group. When you think that surgery is represented in France by such men as Cushing, Brewer, Finney, and Crile, you will readily see that the neurologists who are authorities in their subject are very poorly represented, and if our work is to go on successfully, we must have men of such standing as Ramsey Hunt, Southard, Tilney, Weisenburg, etc. As you doubtless know, troops are moving out very fast, taking our best men with them. We have very few men now to keep up the standing of neurology in the Base Hospitals, and unless something is done, the work we so auspiciously inaugurated will deteriorate very fast.

I have just received a very strong appeal from Salmon in France on this subject. He wants men of position who can be immediately commissioned as majors, or as captains and rapidly advance to majors, as rank is absolutely necessary for proper carrying out of the work.

I am going to ask you to bring this matter to the attention of all the neurologists with whom you are in correspondence. It seems as though where there is more than one medical school in a city, medical schools will have to combine for the purpose of releasing some of the teachers. The situation is very critical and demands immediate action.

Yours very truly,
(Signed) Pearce Bailey,
Lieut.-Colonel, Medical Corps, N. A.

War Department, Office of the Surgeon General,
Washington, March 12, 1918.

Dr. C. L. Dana,
Chairman, Mental Hygiene War Work Committee,
National Committee for Mental Hygiene,
50 Union Square, New York City.

Dear Doctor Dana:—

The Surgeon General directs me to advise you that Colonel Lyster has just returned from the French front with information concerning the creation of a new section of the medical service extremely important, affecting neurologists and psychiatrists. It concerns aviation.

In the first place, aviators require a particularly careful neurological and medical examination before assignment to that special branch of the service, and also during training and afterward, their nervous stability has to be watched carefully. For example, it happens frequently that the first symptoms of an aviator feeling the strain consist in his making bad landings or laying himself open to other accidents. Immediately when this happens it is the Surgeon General's intention to have the aviator carefully examined as to his nervous condition, and the medical officer who examines him will be called upon to make recommendations as to the disposal of the aviator in reference to his findings. The question will come up as to whether he needs rest, transfer, hospital treatment or return.

In addition to all this, an effort is to be made through the joint efforts of the psychiatrists and psychologists to determine beforehand which class of the aerial service the aviator is best fit for. Quite a different personality is required, it seems, for the different classes of the aerial service. For example, fighting men must be young, mentally and physically perfect, daring; scouts, painstaking; night and day bombers, more of the phlegmatic type. It is believed that careful nervous and psychological examinations would contribute greatly to the service in devising tests to determine these types in advance.

The preparation of a commissioned personnel for the above-named purposes is now being undertaken. My personal opinion is that it will require the very highest type of medical officers. The work can be carried out successfully only by men of a combined neurological and psychiatrical training, with long experience and great maturity of judgment. The Division of Neurology and Psychiatry in the Surgeon General's Office turns to you for assistance in recommending names of physicians of this class who will come into the Army for this work.

It will require two general divisions, one to serve with the aviators in France and one a preparatory division to train medical officers in this country for their special duties prior to their departure for France. Dr. Stewart Paton has applied for commission and when commissioned will be assigned to have charge of the first group of medical officers, but he is the only officer at present in mind for this work, and thirty are needed. It is requested that you make these facts known to the alienists, psychiatrists and neurologists of the country.

Very yours truly,
(Signed) Pearce Bailey,
Lieut.-Colonel, Medical Corps, N. A.

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CENSORS' EXAMINATION.

The Censors of the Suffolk District Medical Society will meet to examine candidates for admission to The Massachusetts Medical Society, at 8 The Fenway, on Thursday, May 2, 1918, at 4 p.m.

Candidates, who must be residents of the Suffolk District or non-residents of Massachusetts, should make personal application to the Secretary and *present their medical diplomas*, at least one week before the examination.

For further particulars, apply from 2 to 5 p.m. to
Gilbert Smith, *Secretary.*
99 Commonwealth Avenue.

MEMORIAL RESOLUTIONS FOR DR. BLAKE.

The following resolutions were adopted at the meeting of the Obstetrical Society of Boston, March 26, 1918:

JOHN G. BLAKE: IN MEMORIAM.

In the death of Dr. John G. Blake every member of the Obstetrical Society shares with his countless other friends the sense of a very real and personal loss. Although perennially young, he was our Nestor, joining the Society in 1879; he was constant in attendance at our meetings, to which his ripe experience added much of value. An extraordinary knowledge of the properties of drugs, combined with more than his share of medical common sense, made him singularly well equipped for his chosen work, while his personal charm and the happiness that radiated from him helped to make him the ideal family doctor and friend of the old school.

We have lost a very dear associate. May he rest in peace.

Malcolm Storer,
Charles H. Hare.

Correspondence.

BATHING IN RUSSIA.

Roxbury, Mass., March 28, 1918.

Mr. Editor:—

In an article by Dr. T. Leary in the issue of March 28, 1918, an erroneous impression was made, that Russia is the land "of the annual bath."

I was born in Russia and brought up there until I became a youth of twenty—and that is quite a long while ago. Then, as it is more likely now, frequent baths were considered such a necessity that even the poorest peasant had a small log hut specially built and reserved for this purpose.

These bath houses were, of course, quite primitive, but they always had plenty of hot steam and plenty of hot water. To take such a bath in winter time and to get out naked in the yard and roll for a few minutes in the deep snow was a favorite sport enjoyed by many and often partaken of by the writer of this letter.

M. J. Konikow, M.D.

A SCOTTISH HAIR-CAST CASE.

Boston, March 23, 1918.

Mr. Editor:—

The cases brought up by investigators' dragnets, mentioned this week (Boston Medical and Surgical Journal, March 21, 1918, pp. 396, 397) did not include an early case, noted in review in *Archeological Journal*, 1916, lxxii, at p. 402, of *Banff Charters, A. D. 1232-1703, viz.*: Oct. 9, 1232, lands "were granted to Master Neis, the King's physician, by Alexander II;" Neis "is reported to have obtained this reward for the service of cutting a hair-ball from his royal master's heart." While the service seems shadowy, the fee was substantial.

Alfred Ela.

SOCIETY NOTICES.

New England Pediatric Society.—The fifty-third meeting of the New England Pediatric Society will be held at the Boston Medical Library, on Friday, April 12, 1918, at 8.15 p.m.

The following papers will be read:

1. An Unusual Food-borne (Probably Milk) Epidemic of Scarlet Fever.
Edwin H. Place, M.D., Boston
H. Linenthal, M.D., Boston
A. B. Lyon, M.D., Boston
M. C. Cheney, M.D., Boston.
2. An Analysis of the Wassermann Reactions Done at the Boston Lying-in Hospital for the Years 1916-1917. John B. Swift, M.D., Boston.
3. Auto-serum Treatment of Chorea.
P. H. Sylvester, M.D., Boston.

Light refreshments will be served after the meeting.

Charles Hunter Dunn, M.D., *President*,
Richard M. Smith, M.D., *Secretary*.

Suffolk District Medical Society.—The annual meeting will be held on Wednesday, April 24, 1918, at the Boston Medical Library, at 8.15 p.m.

Business meeting: Reports of officers and committees, election of officers, incidental business.

The paper of the evening will be by Dr. Eugene Kelley, State Commissioner of Health, on

"The State Venereal Disease Program."

Guests will be welcome at the second part of the meeting, which will begin at about 8.45 p.m.

Gilbert Smith, *Secretary*.

Worcester District Medical Society.—The next regular meeting will be held in G. A. R. Hall, 55 Pearl Street, Worcester, at 4.15 p.m., Wednesday, April 10, 1918.

PAPER.

"Delivery by Caesarean Sections—Based on a Study of Sixty Cases."
by Dr. William H. Rose, Jr., Worcester.

The Censors will meet for examination of candidates for fellowship, Thursday, May 2, 1918, at 4 p.m., in the Reference Department, Worcester Public Library. Candidates should make application to the undersigned a week before that date.

Ernest L. Hunt, *Secretary*.

Massachusetts Anti-Tuberculosis League.—The annual meeting of the Massachusetts Anti-Tuberculosis League will be held in Boston on Thursday, April 11. The transactions of the meeting will be published in a later issue of the Journal.

NOTICE.

The Boston Medical Library is desirous of having a copy of the circular which was sent out to the profession in Boston in 1875 calling for a meeting to consider the formation of a Medical Library. Any one willing to send a copy to the Library, No. 8 The Fenway, will receive the thanks of

Yours very truly,
John W. Farlow, *Librarian*.

RECENT DEATH.

William Jabez Nickerson, M.D., a retired Fellow of The Massachusetts Medical Society, died at his home in New Bedford, March 6, 1918, aged 73 years. He was born in Litchfield, Me., Sept. 12, 1844, and was graduated from the Bowdoin Medical School in 1870. He had practised in Everett and Yarmouth, Mass., in Silver City, New Mexico, and in New Bedford since 1886.

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THE PHYSICAL EXAMINATION IN PULMONARY TUBERCULOSIS.*

By Joseph H. Pratt, M.D., Boston.

When the tubercle bacillus was discovered it seemed to many that auscultation and percussion no longer deserved the respect and careful study that had been given to them for over fifty years in the diagnosis of pulmonary tuberculosis. The need of acquiring any degree of proficiency in these difficult arts has certainly seemed less urgent to the teachers and students of this generation than it did to those who lived in the days before Koch made his great discovery.

Within more recent times the use of the x-ray has still further lessened, in the minds of many, the importance of the physical signs. Yet, viewed in the right light, the bacteriological as well as the radiographic examinations are important aids in the study of the old physical methods and of determining their value and limitations. That this is true is shown by the published investigations dealing with auscultation, and especially with percussion, that have been made by workers who have controlled their findings by means of the modern methods.

When one hears the value of a knowledge of physical diagnosis belittled by those who seek "short cuts" in matters medical, it is well to remember the remark credited to Friedrich Müller, one of the leading authorities in the chemical pathology of metabolism as well as in clinical medicine, that the physician's percussing finger is worth more to him in diagnosis than a whole chemical laboratory.

I would not be misunderstood. I am simply urging the importance of more careful study of physical signs, not only for the medical student, but to you as practising physicians. Taken up with enthusiasm and carried on with assiduity, it will convert the dull routine of physical examinations into a delightful search for new knowledge. I believe there are no diagnostic methods more difficult than auscultation and percussion, and none that require a longer period of diligent application; but skill in their use and application is worth the toil. Many of us have no laboratory in which to carry out investigations which seem even to the onlooker so fascinating, but every general practitioner has the opportunities to advance his own knowledge and that of medical science by a more painstaking and intelligent use of these old methods on the chests of his own patients. Aided by new means of inquiry, we can turn to the old physical methods with the confident hope that they will yield new knowledge. The early masters of physical methods of examination had to wait until the autopsy before their diagnosis could be verified, while workers today have early confirmation in many cases from the finding of tubercle bacilli.

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* Lecture in the Course on Tuberculosis of the Framingham Medical Club, Framingham, Mass., October 4, 1917.

We need to take up such a study in the spirit and with the diligence of the pioneer workers in physical diagnosis. Let me quote from that distinguished London physician, P. M. Latham, who did so much to introduce the new knowledge gained by Laennec into English medicine. " 'That everything is easy when you know it' sounds like the simplest of truisms; but indeed it is a very wise apophthegm. Its import is that, be a thing ever so difficult, you may, by taking the necessary pains, obtain such a mastery over it, as to be surprised that you ever thought it difficult at all. Auscultation surely is not the most difficult thing in the world; neither is it the easiest. It is beset with many perplexities, and requires much time, and labor, and patience, and caution, to master it perfectly; but being mastered, it becomes the safest, simplest guide, within its proper sphere, to a just diagnosis."

Although the subject assigned to me in this course of lectures is the physical examination in pulmonary tuberculosis, and although I have tried to emphasize the importance of a knowledge of the physical signs, yet I want to make it perfectly clear that in the diagnosis of pulmonary tuberculosis as an active disease and not as a pathological condition, there are other things more important than the physical signs.

I believe, with Hamman,—although he does not state it in just these words,—that a pair of scales and a thermometer are more important in the diagnosis of active tuberculosis than a stethoscope. This does not mean that the stethoscope should be discarded, but that diagnosis has too often depended on what it revealed or failed to reveal, and the scales and thermometer have not been used. That auscultation intelligently used "within its proper scope" is of great value in the diagnosis of phthisis would be foolish to deny.

That the symptoms are of more value in the diagnosis of active tuberculosis than the physical signs has been tersely stated by Lawrason Brown in the following aphorisms: "Symptoms indicate that a patient is sick, while physical signs point out only the mischief that has been done. Symptoms are a better and more accurate guide to activity than are physical signs."

Subjective symptoms, such as lassitude, persistent cough, pain in the chest, are of great importance. A history of slight but continued fever, the spitting of blood, night sweats, and the raising of sputum from the chest, and loss of weight, even in the absence of any physical signs on examination of the lungs, are so characteristic of pulmonary tuberculosis that this diagnosis should be tentatively held until by careful investigation it has been disproved. It should never be forgotten that tubercle bacilli may be absent from the sputum, even when repeated search is made for them, until the disease has become far advanced. Gerhardt cites a case in which they were found only on the sixtieth examination. To wait until a probable diagnosis of tuberculosis has become a positive one by the finding of tubercle bacilli often means the sacrifice of the patient's life or, what is to many a harder fate, chronic invalidism.

Without a knowledge of the special pathology of pulmonary tuberculosis, physical signs will be of little value. Clinically and pathologically, there are three distinct types of the disease.

1. Acute miliary tuberculosis.
2. Tuberculous pneumonia.
3. Chronic pulmonary tuberculosis.

The first condition, as you well know, has often been mistaken for typhoid fever. Although the lungs may be studded with miliary tubercle their presence cannot be discovered by auscultation or percussion. How disappointed Laennec must have been when he had to admit to himself that the new methods of diagnosis were of no aid in this type of tuberculosis!

In tuberculous pneumonia the tubercle bacilli do not form tubercles, but produce by means of their toxins a gelatinous exudation into the alveoli of the lungs over a large area, frequently an entire lobe. The exudate consists largely of desquamated epithelium, serum and fibrin. The physical signs are those of ordinary lobar pneumonia, with which disease it is often confounded in the first week or two of its course.

It is the third type that we have before us for consideration. This is the common form. The first two are, fortunately, rare. Most of the active cases of chronic pulmonary tuberculosis can be arranged pathologically in three subdivisions, according to their clinical frequency: (1) Chronic parenchymatous tuberculosis. This usually begins in or near the apex of the lung. (2) Peribronchial tuberculosis. (3) Hilus tuberculosis. The second form usually develops from relatively small and quiescent infections of the hilus region. It is possible that many cases of apical disease are not primary in the apex, but secondary to old infections of the hilus (Bushnell). This view is supported by many radiographic plates in which shadows, due to peribronchial thickening, extend from areas of disease in the hilus to the parenchymatous disease in the apex. The clinical characteristics of peribronchial tuberculosis have been well described by Bushnell in a recent paper.

There is no doubt that the tracheo-bronchial lymph nodes of the vast majority of children are tuberculous or contain living tubercle bacilli, although they present at no time any clinical signs of the disease. Albrecht and Arnstein found either tuberculosis of the tracheo-bronchial lymph nodes or clinical tuberculosis in 87% of the bodies of 100 children from 6 to 16 years of age, who died of various diseases. In 13 of the cases the tuberculosis was demonstrated only on histological examination.

The changes in the tissues produced by the tubercle bacilli are dependent in large part on the concentration of the poison produced by the bacilli. The most common lesion is a proliferation of the connective tissue cells, an actual new growth giving rise to tubercles or to diffuse tuberculous tissue without the formation of tubercles. There may be, in addition, exudation, caseation with or without softening, and collateral inflammation. This last—the collateral inflammation—is especially important when one is considering the origin and significance of the physical signs in active tuberculosis. About a nucleus of tuberculous tissue is a relatively wide zone or area of ordinary serous, fibrinous or cellular inflammation, just as about a small active focus of pus deep in the subcutaneous tissues there will be a wide area of induration due to inflammation, reaching, it may be, to the skin. This collateral inflammation about a tuberculous focus is produced by some diffusible toxic product of the tubercle bacillus, but the tissues involved in this form of inflammation may be free from tubercle bacilli. According to Tendeloo, the tuberculous infiltrations in the lung which give rise to the physical signs we obtain on auscultation and percussion are chiefly due to the collateral inflammation about a caseous nucleus. This caseous nucleus frequently is so small as to be easily overlooked at autopsy.

The fibrous tissue which forms in large amount about tuberculous areas in the process of healing is probably the result of the stimulating action of diluted tuberculosis toxins. This fibrous tissue influences the physical signs in different ways. It gives rise to shrinking of the lungs, and this leads to a sinking in of the tissues of the chest that overlie the portion of lung affected, and diminished movement of the lung during respiration. The increased density produced by the fibrous tissue is the cause of the marked dulness on percussion present over healed lesions. Bands of fibrous tissue extending to the chest wall from diseased areas in the lungs increase the conduction of sound and explain the loud breath sounds heard over old arrested areas of disease.

Before taking up for consideration the methods used in the physical diagnosis of pulmonary tuberculosis, I wish to emphasize the fact that a negative physical examination of the lungs does not exclude the presence of the disease. Physicians often are misled and their suspicions allayed in cases of tuberculosis by the absence of physical signs. This is seen most strikingly in the hemoptysis out of a clear sky that ushers in the clinical history of tuberculosis in nearly 10% of the cases. It has long been recognized "that the absence of demonstrable lesions should never lead one to declare that a hemorrhage did not come from the lungs" (Minor). In my experience it is the exception rather than the rule to find any definite physical signs of disease in patients who have had a frank hemorrhage from the lungs as the ilnitial symptom. Yet hemoptysis out of a clear sky is due to pulmonary tuberculosis in almost 100% of the cases. New evidence of this from observations made in the post-mortem room was recently presented by Lord.

In spite of this relation between the spitting of blood and consumption, which has been known since the time of Hippocrates, how prone physicians are, even in our day, after they have made a negative physical examination, to reassure the patient with the statement that there is nothing wrong in the lungs! An hemoptysis of a teaspoonful or more of clear blood always justifies the tentative diagnosis of phthisis, even in the absence of physical signs. It should be to the physician as clear a warning of danger as the red light is to the engineer of the swiftly-moving train.

Even in advanced phthisis I have occasionally found the percussion note normal, the respiration vesicular, and few râles or none whatever. This is no recent observation. It was known to Andral as early as 1832, and probably earlier. Listen to the quotation from a letter written by James Jackson, Jr., to the elder Jackson from Paris on January 23, 1832:

> "My dear Father:
>
> I have an hour to spare before going to bed, and as I wish to review a portion of Andral's lecture of this afternoon, I will do it by giving you an abstract of the same. . .
>
> The general subject was the symptoms of phthisis, of which disease he has given a most learned description. . . The (percussion) sound may be everywhere normal, and this, too, during all the stages of the disease, even after the formation of cavities; as when these are deep seated. . . In many cases, or at least in some, we must acknowledge that the respiration is natural throughout the whole course of the disease. This may be while the tubercles are crude, or even after they are softened and caverns are formed, if these be deep seated. . . (Râles) sometimes none whatever. . . "

If a patient is ill with symptoms suggestive of phthisis, and nothing abnormal is found on repeated physical examinations, radiograms of the lungs should be made before one has the right to say that this disease is not the probable cause of the symptoms. Even with negative radiograms, as well as negative physical examinations, one cannot always rule out the possibility of advanced pulmonary tuberculosis. I saw such a case a year ago. There had been high fever for weeks, with great prostration and loss of weight. Repeated examinations of the chest had revealed nothing abnormal, and no evidence of tuberculosis was found in the radiograms. On my examination of the chest I could detect no evidence of pulmonary disease. Lawrason Brown, who saw the patient a week later, noticed diminished expansion of the upper part of the left chest, but that was all he found of any significance. A few months later, when I saw the patient for a second time, there were signs of extensive involvement of the lungs, with dulness, broncho-vesicular breathing and many moist râles. By that time tubercle bacilli were present in the sputum.

The difficulties in the interpretation of physical signs are increased by the necessity of distinguishing between active and latent or healed tuberculosis. Nearly every adult, as we now know, becomes infected in childhood. Hence, a distinction between infection and disease must be made in dealing with the clinical aspects of pulmonary tuberculosis.

It is the clinical disease that we are called upon to diagnose and treat. Physical signs without symptoms indicate that there is no active disease, and are sometimes found in persons that are strong and apparently healthy. They are evidence only of an old infection that has produced a definite lesion in the lung. Sometimes this is a healed process, sometimes a latent one, that under conditions unfavorable to the human host, but favorable to the tubercle bacilli, will "light up" and become active disease.

Does so-called incipient chronic tuberculosis really occur in any considerable proportion of cases? The teachings on this point for the past twenty years have been very definite. No one seemed to doubt that the disease usually began in a small area at the apex, which by its development produced after a short time local and constitutional symptoms, which increased slowly, often insidiously, and were accompanied by slight but characteristic physical signs in the lungs. We believed that in every case of chronic pulmonary tuberculosis there was an early stage that could be recognized by the careful, skilful diagnostician. It was Dr. Louis Hamman of Baltimore, I think, who first expressed doubt that an incipient stage could be recognized as such in the majority of cases of clinical pulmonary tuberculosis. When the defenders of the traditional view began to look about for evidence with which to overwhelm Dr. Hamman they found, as is usually the case with teachings which everybody has accepted without question, that there was very little evidence at hand to be offered in its support.

This is an important matter to settle because so much attention has been directed in the anti-tuberculosis campaign to early diagnosis and the prompt treatment of these incipient cases.

That this question, raised several years ago, has not been answered is evidence in itself that there is still much to be learned from the careful study of cases of pulmonary tuberculosis during the period when symptoms are developing. If a relatively small number of incipient cases were carefully examined by physicians skilled in physical diagnosis, at frequent intervals during a long period, and the observations recorded in detail, information at present lacking would be obtained that would not only answer this question, but would probably furnish at the same time a trustworthy guide for the physical diagnosis of incipient tuberculosis. Here is an investigation that can best be made by general practitioners, possibly by dispensary or out-patient physicians, but it certainly cannot be carried out by the clinical professors, whose work is confined to the wards, or by medical consultants.

No less a man than Sir James Mackenzie believes that the greatest opportunities for advancing clinical medicine at the present time are within the reach of family practitioners only, because they alone can study disease during its early stages and follow its progress.

The order of examination that is followed by all well-trained clinicians is that so well put by Samuel Gee in the following words: "Suppose a patient with the chest exposed ready to undergo a physical examination: the physician. first of all, carefully surveys the chest with his eye, this is Inspection; next, with his hand, this is Palpation; he next strikes the chest, Percussion; and lastly he puts his ear upon the chest, Auscultation."

To many physicians, auscultation of the lungs is the beginning and end of the physical examination in a case of suspected pulmonary tuberculosis. This is wholly wrong. The inexperienced physician, who needs most the aid in diagnosis furnished by careful inspection, palpation and percussion, is the one who neglects them most.

If proper use is made of these other methods, by the time the examiner is ready to listen to the chest, findings of such value regarding the character and location of disease will usually be obtained, that he needs only the evidence afforded by auscultation to confirm his physical diagnosis.

It is important for the practitioner who earnestly wishes to improve his diagnostic skill to proceed slowly and carefully, and to record his observations at the time he makes them. He should note down in regular order his findings on inspection, palpation, percussion and auscultation. This is especially important when the deviations from the normal are slight. I find it helpful to record my observations at the time I make them, before my opinion can be influenced by additional and possibly contradictory evidence. In this way errors due to the personal equation are lessened. Furthermore, the recording of detailed findings aids one to observe carefully and accurately. If there is lack of time for thorough study, the physician should insist upon a subsequent visit. If the patient will not return, any opinion upon the probability of tuberculous disease should be withheld. Personally, I cannot remember ever having had a patient refuse this reasonable request.

Inspection is ranked by Lawrason Brown second only in importance to auscultation in the detection of tuberculous lung lesions. I find its value is not appreciated by most physicians, especially as an aid to the diagnosis of early, active cases.

The examination should always be made in a warm, well-lighted room. The patient should remove all clothes from the upper part of the body down to the waist, in order that the entire chest be freely exposed. The clothing about the waist is loosened, as otherwise the motion of the lower chest may be restricted or the diaphragm be pushed upward by the abdominal organs. There should be no exceptions to this rule. For inspection the patient should be seated, preferably on a round stool. The patient is instructed to relax the muscles and sit at ease. I have the patient face a window so that the light will strike directly on the chest.

Lagging of the upper front of the chest on the affected side was observed in 43% of my cases of so-called incipient disease at the first examination. This restricted movement occurs before there is any definite retraction of the chest wall, and is probably due to diminished expansion of the affected part of the lung. Retraction of an apex with deepening of the grooves above and below the clavicle is evidence of an old lesion. There may be considerable deformity of the chest wall without limitation of movement. If you find lagging of one apex and retraction of the other, the first is probably the seat of recent active disease, the other of an old process that may be healed. Limitation in the motion of the lower part of the chest is usually due to pleurisy.

The patient's attention should not be drawn to his respiration by asking him to breathe in any particular way. I inspect the front of the chest while standing or sitting in front of the patient. Usually lagging, if it exists, can be detected from this position. Then stand directly behind the patient, whose head should be thrown forward, look over the shoulders and note the movement of both upper fronts of the chest. Both delay in the beginning of the respiratory movement and limitation of the excursion can be readily observed. It is easy to note slight unilateral flattening of the upper chest when looking down from above and behind. After inspecting the front of the chest, the patient should turn on the stool until the back is toward the light. Then note particularly any difference in the movement of the two scapulae during quiet respiration. It is not uncommon to have restricted movement of one apex in front and of the lower back on the opposite side.

Atrophy of chest muscles, especially the trapezius on the affected side, has long been recognized. It is found in connection with old lesions. Pottenger has called attention to muscle spasm about an active lesion, which he believes to be of importance in diagnosis. The trapezius, the sterno-mastoid, and the scaleni are the muscles most commonly involved. This spasm of the muscles can sometimes be made out on inspection. The increased tone causes the outlines of the muscles to stand out more prominently than on the normal side. Pottenger's observations, it seems to me, have attracted less attention than they deserve, and the significance of this increased muscular tone and its value in the diagnosis of active tuberculosis have not been determined. It is possible that the restricted motion on respiration in early pulmonary tuberculosis, is due to spasm of the chest muscles.

General wasting of subcutaneous fat and the shape of the thorax should, of course, be carefully noted. I have been impressed, however, with the relatively large proportion of well-built and fairly well-nourished persons that develop phthisis.

Palpation often confirms the results of inspection regarding the respiratory movements of the chest. A diminished excursion, especially of the lower chest on one side, sometimes not made out by inspection, is detected by placing the palms gently over the lateral regions and noting the amount of movement communicated to the hands by quiet respiration.

The degree of tonus in the sterno-mastoid, trapezius, scaleni, and pectoralis major muscles may be tested according to the method described by Pottenger in his recent work on tuberculosis. My observations are too few to be conclusive, but in certain cases of active tuberculosis I have found marked increase of the tonus in one or more of the muscles on the affected side.

Percussion. The value of percussion in the diagnosis of early phthisis is not generally known. This is due to the fact that heavy percussion has been practised by most clinicians since the days of Corvisart. Laennec states that percussion often yields no information in phthisis. He speaks of the difficulty of the method and says many physicians of his time were not able to bring out sufficient sound to demonstrate differences of resonance without hurting the patient with the force of the blow. It is evident, from a statement made in *L'Auscultation Médiate,* that Laennec himself used heavy percussion. Whoever it was who first recognized the value of very light percussion in diagnosis made a discovery scarcely less important than Auenbrugger himself.

Sir William Gairdner, the eminent Glasgow physician, lived and worked as a young man with the pioneers in physical diagnosis who followed Laennec. The span of his professional life reached from that generation to the present one. In a letter published about 1900 in the *Edinburgh Medical Journal,* he made the interesting observation that the medical students in Scotland at the time he wrote were taught to use a stronger percussion stroke than that employed by teachers in the first half of the last century.

I believe that George M. Garland of Boston was the first physician in America, and probably in the world, to use and teach and advocate in print, very light percussion. He has employed it for over forty years. In his classical work on pneumo-dynamics, published in 1878, he repeatedly refers to the importance of very light percussion. In the first chapter, in speaking of the curved line of flatness with pleural effusions, he says, "I must emphasize the necessity of percussing *lightly,* and I cannot urge this point too earnestly." Dr. Garland learned the value of light percussion from experiments he made on animals. In 1874 he injected into the pleural cavities of dogs fluids capable of "setting" into casts. To mark on the chest wall the true curve of the upper level of the artificial effusion, he found it necessary to use very light percussion. Garland's method of percussion is in reality a combination of percussion and palpation, and he relies more on the sense of resistance to the finger than to the pitch of the note. The importance of percussing in vertical lines is emphasized, and the points where the notes become flat are carefully noted. Dr. Garland tells me that all his teachers in this country and abroad used a heavy percussion stroke. Dr. F. C. Shattuck early adopted light percussion and advocated its use to his many classes of students at the Massachusetts General Hospital. In some of the leading American medical schools today a heavy percussion stroke is still taught. The so-called light percussion of many physicians is heavy in comparison to the force of the blow used by those who practise very light percussion. In recent years the lightest possible percussion stroke—threshold percussion—has been recommended by Goldscheider.

I have employed for many years a percussion stroke so light that the sound it produces can be heard only a foot or two from the patient. I first used this light percussion in marking out the absolute cardiac dulness when a student in Krehl's clinic, and later employed it when I learned from Minor the importance of outlining the apical isthmus—the so-called Kroenig's isthmus—in tuberculosis. I think the tactile perception of increased resistance enters largely into this form of percussion. One hears something or nothing. To bring out the pitch distinctly, a stronger blow must be used. Percussion is certainly not a method of precision, and it must be frankly admitted that slight or questionable dulness has little significance and should be disregarded unless supported by definite auscultatory signs. Nevertheless, I have never known anyone who has mastered the technic of light percussion who was not convinced of its great value in the diagnosis of pulmonary and cardiac disease. The art of light percussion is difficult to acquire, but less difficult and more trustworthy than heavy percussion. A slight variation in the direction of the heavy stroke alters the percussion note, as Laennec observed, and different sounds are elicited by strokes of different strength over the same region.

It has been taught in America for many years by the followers of Austin Flint that the right apex is somewhat dull. So much stress is laid on this point by some teachers of physical diagnosis that their students think they can or should recognize this physiological dulness. Austin Flint, as is evident from his writings, used a forcible percussion stroke. From his statement that in hospital practice it is necessary to use a plessimeter to prevent injury to the fingers, I think it is justifiable to conclude that he used a very heavy blow. Possibly this explains the slight dulness he noted at the right apex, which was not found by any of the other great masters of physical diagnosis before or since his time.

The cases of so-called physiological dulness brought to my attention by students were found to have a definite narrowing of Kroenig's isthmus, and hence were pathological. In most instances, other signs of tuberculosis were found. To avoid this error, regard with suspicion any definite dulness at either apex, as it is probably evidence of a tuberculous lesion. In seeking signs of apical disease, always percuss the top of the axilla. Occasionally in early tuberculosis, it will be found distinctly dull, while the note over the apex, anteriorly and posteriorly, is resonant.

In percussing the lungs it is important to mark out the lower border during quiet breathing in the lateral and posterior portions of the chest. The apical isthmus is a zone over the top of the shoulder, usually 3 to 4 cm. wide in its upper part. The inner border, which can be marked out more satisfactorily than the outer border, extends normally downward and inward from the border of the trapezius muscle to the inner head of the sterno-mastoid just above the clavicle. I have found that dulness above the inner third of the clavicle on very light percussion is an early sign in apical tuberculosis. The terminal phalanx of the middle finger of the left hand, used as a plessimeter, is placed on the skin just above and parallel to the clavicle. One should first percuss in the region above the middle of the clavicle, and then move the finger along toward the middle line, percussing as one proceeds, until the resonance disappears. In this region there is rarely much fat and the muscles are thin, hence dulness here can be made out frequently when percussion of the other parts of the apical isthmus is unsatisfactory. It should be called to mind that the portion of the lung apex above the clavicle lies between the two heads of the sterno-mastoid muscle. Hence, this area of early dulness is directly over the apex.

When a student in Krehl's Tübingen Clinic, in 1902, I learned the percussion method of determining the movability of the lower border of the lungs, and I have employed it ever since as a routine procedure in examining the lungs for tuberculosis. In the mid-axillary and scapular lines, the lower border of resonance is determined while the patient holds his breath at the end of full inspiration and again after full expiration. The width of the excursion is measured and recorded. If there is dulness over the lower part of the lung, it is, of course, impossible to determine this respiratory movement. It is a measure not of the movement of the diaphragm but of the lung in the pleural sinus, and is often found lessened or absent on the affected side in pulmonary tuberculosis sufficiently early to be of aid in diagnosis. In 20% of my incipient cases a limitation in the excursion was found.

In discussing what can be learned from inspection, I did not mention Litten's diaphragmatic sign, because it is of little practical value. Limitation in the motion of the diaphragm can be readily made out on fluoroscopic examination.

Auscultation. Whether percussion or auscultation yields the earliest evidence of the existence of pulmonary tuberculosis is still a mooted question. That dulness on light percussion is an early physical sign is shown by my own statistics. In 26, or 83%, of the so-called early cases in which I made the physical examination there was dulness; in 23, or 77%, enfeebled or abnormal breath sounds; and in 18, or 60%, râles.

It seems strange that in the 101 years that have passed since the study of the auscultatory signs of phthisis was begun by Laennec, the significance of the harsh, granular and broncho-vesicular types of respiration has not been determined. Whether they are due to catarrh of the finer bronchioles or to induration of the surrounding tissues, is still unsettled. Here certainly is a profitable field for study.

In the past twenty years too much attention has been paid in diagnosis to slight changes in the respiratory murmur. I refer particularly to harsh inspiration and the granular breathing of Grancher. The physical signs found in a healed or arrested lesion are often mistaken for those of active disease. Years after all symptoms have disappeared, dulness, associated with harsh, granular, or broncho-vesicular breathing may persist. Piéry and Bushnell believe that these modifications of respiration, which are generally regarded as early signs of tuberculosis, are more frequently found after induration of the tissues has taken place. In the absence of râles, they would interpret broncho-vesicular breathing as an indication that the lesion was inactive.

Lack of time forbids an extensive consideration of râles, although their presence is the surest indication to be obtained on the physical examination of the chest that active disease exists. The ability to recognize all the deviations from the normal, that I have mentioned, is not to be expected from every practising physician, but no one is qualified to examine a chest at all if he cannot recognize râles. Yet I wonder how large a proportion of hospital physicians or tuberculosis specialists could state clearly the difference between crepitant and sub-crepitant râles, fine, moist râles and crackles. Yet these are distinctions of importance that were all recognized and described by Laennec within a period of three years following the discovery of auscultation, and he had no one to teach him except Nature.

The importance of coughing as an aid to the detection of râles should be emphasized. First listen over a region with the patient breathing quietly; then direct the patient to exhale, cough, inhale. My friend, Dr. Horace Gray, has called my attention to the fact that Laennec recognized that coughing was of value in bringing out râles, and that the cough should not be too forcible. Turban speaks of a patient who, having been examined by a great many physicians, based his judgment of their merit on whether or not they had made him cough during auscultation.

Fine, persistent râles, limited to one portion of the lungs, are regarded generally as the first trustworthy physical sign of active disease. But it must not be forgotten that localized râles may persist for months and years after a patient has recovered his health. I have watched a number of such cases for several years in fear that the persistence of moist râles indicated impending trouble, but no symptoms developed. In one case with a past history of active disease, I heard at every examination many fine, moist râles over the left lower lobe during a period of two to three years before the patient's death. The autopsy showed healed tuberculosis of this lobe, with no evidence of recent disease.

Wishing to be guided by facts and not by impressions of what I had personally observed, I had my findings on the physical examination of thirty cases, classed as incipient, collected and analyzed as an aid in the preparation of this talk. The figures show something of interest, but I doubt if it would be correct to regard all of the cases as examples of early active disease. They were selected from a large series of cases treated, for the most part, in my tuberculosis class. As I wished to use the series in reporting the effect of treatment, I was unwilling to classify them myself as incipient, moderately advanced and far advanced, and so I had my associates do it for me. In their zeal that no case be placed in a more advanced stage than it properly belonged, and thereby make the results of treatment appear better than they ought to appear, I think you will agree with me, after examining the table, that they went too far.

Table.

Physical Signs in 30 Cases of So-called Incipient Phthisis.

Lagging of the affected side	13 or 43%
Dulness	28 or 93%
Narrowing of apical isthmus	26 or 83%
Abnormal breathing of different types	23 or 77%
Enfeebled breathing	10 or 33%
Harsh breathing	6 or 20%
Granular breathing	3 or 10%
Cog-wheel breathing	3 or 10%
Broncho-vesicular breathing	8 or 26%
Bronchial breathing	3 or 10%
Râles	18 or 60%

Most of these cases were examined a short time after definite symptoms developed. The variety and character of the physical signs presented in this group make it evident that many of these were cases in which there had been no early stage in the clinical sense (Hamman).

A study of the temperature, with readings made and recorded every two hours from 8 a.m. to 8 p.m., is a better guide in determining activity of the disease than the physical examination. There is usually some elevation of temperature in the early stage of tuberculosis, which may occur only for a period of a few hours daily, hence the need of making frequent observations. Even before physical signs develop, fever may be present. An increase in the daily range, even when the maximum temperature is not above normal, is of diagnostic value in pulmonary tuberculosis.

Time does not permit of a discussion of the pulse, but acceleration is an early sign, and the rapid rate frequently persists after the temperature has dropped to normal.

The conclusion to be drawn from this whole matter of the relation of physical signs to diagnosis is well stated by that great master of medicine, William Stokes. His words are as true and as applicable today as when they were written in 1837:

> "It cannot be too often repeated that physical signs only reveal mechanical conditions, which may proceed from the most different causes; and that the latter are to be determined by a process of reasoning on their connection and succession, on their relation to time, and their association with symptoms; it is in this that the medical mind is seen. Without this power I have no hesitation in saying it would be safer wholly to neglect the physical signs, and to trust in practice to symptoms alone."

THE STANDARDIZATION OF HOSPITALS.*

By Charles A. Drew, M.D., Worcester, Mass.,

Superintendent, Worcester City Hospital.

At the January meeting of the Trustees, a communication was read and a questionnaire considered coming from the American College of Surgeons, relating to a proposed standardization and classification of hospitals in the United States and Canada.

It may be worth while to review the reasons for the proposed "standardization" in the interest of a clearer understanding of this important project. It is alleged that by reason of curable defects, the majority of hospitals are not doing the good work they should be doing. While it is granted that the small hospital of limited means cannot do all that can be done by the hospital with many beds and a large income, it is held that the defects do not correspond to size, nor always depend on poverty. Faulty organization, a poor equipment and some other things are, it is claimed, more often responsible than is poverty.

It does not appear that the College of Surgeons is aiming at autocratic dominion. The College does not ask for legislative powers to coerce, and it professes to believe only in constructive and helpful criticism. This same project has been discussed by the American Hospital Association at several sessions, so that it is not a new subject to well-informed hospital workers. We fancy there are few who will deny that much good may grow out of this proposed standardization and classification. The argument runs something like this: The comfort and complete recovery of the patients is of first importance. The advancement of the science of medicine and surgery, the teaching of internes and nurses, and the welfare of these student physicians and nurses while being taught are also very important considerations. No hospital that cannot make a fair showing in each of these important functions can expect to be considered a ''Class A'' hospital.

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* Presented, in abstract, at the February, 1918, meeting of the Trustees of City Hospital, Worcester.

It is held that a fair judgment may be had of the work of a hospital by the care with which its work is recorded. Hence it is that case records count for much to credit or discredit a hospital.

It is alleged that only a few hospitals have an adequate ''follow-up'' system, without which no one knows how many of its discharged patients ever do fully recover. It is alleged that neither the managing board, the surgeon who operates, nor the superintendent in the average hospital, is likely to know what happens to a patient after he leaves the hospital, unless he returns for further treatment.

It is charged that ''we put young graduates into your hospitals as internes and nobody teaches them.'' ''They are left to run at their own sweet wills, provided they don't get in the way of the machine,—either the administrative or the medical machine, each of which rolls through the institution on its hurry-up schedule,—and provided also that they (the internes) do a certain amount of routine work.'' ''Nobody is responsible for their education.'' ''They gather crumbs, as it were, from the rich man's table—chiefly the operating table! But so far as systematic training is concerned they do not get it.'' ''If they 'learn by doing,' either they've got to have critical guidance (teaching) or else the patients will suffer.''*

It is claimed that, in the majority of hospitals, many patients do suffer because the managing board requires almost no accounting from a member of the staff once he is appointed, and because the staff, speaking broadly, do not examine the work or the medical records made by the internes, critically. It is claimed that this system—which might be called a faith system because based on the far-reaching quality of faith—is not business-like and, as applied to hospitals, does not lead to ''the substance of things hoped for''; nor is it likely to produce ''evidence of things not seen.'' This may be said, however: that it is greatly to the credit of the young medical men serving as internes in hospitals run on the faith system that responsibility does usually stimulate eight internes out of ten to do good work, in spite of a lack of systematic instruction. But there comes a time, too frequently, when the one or two of the ten become seniors and exemplars for younger internes. Then it is that the want of systematic and careful supervision works harm to patients and to the reputation of the hospital. It is among the counts of the indictment that the managing board of a hospital run on the faith system never drops a member of the staff, once appointed, until he has reached a fore-ordained age limit. It is also charged that no member of the staff ever recommends the release of an interne because of neglect of duty. This evidence of faith and charity seems to the critics too one-sided. They claim that too much faith and charity on one side gives the patient a ''raw deal.''

It is urged, by way of argument, that no business enterprise can hope for success unless the directors, either by personal examination, or by proxy, keep in touch with the quality of the work turned out by the several artisans and experts whom they appoint to responsible positions. It is urged, further, that it is unreasonable to expect an interne to do his best in making records that he knows are not likely to be read by staff or trustees, at least while he is connected with the hospital. It is claimed that a busy visiting surgeon, depending on an exacting private practice for bread and butter and means to support and educate a family, is not likely to spend the necessary time to organize and maintain a ''follow-up'' system which is pretty sure to lapse into desuetude as soon as the service is turned over to his less painstaking colleague. Hence it is argued that ''it is as easy for a camel to go through the eye of a needle'' as for a hospital to do its best work under the faith system of organization.

It seems that these reformers are not depending on theory alone; many of the propagandists have had practical experience. Many of them have had responsible positions as visiting surgeons or physicians to large hospitals. Some have had experience in trying to maintain a ''follow-up'' system and a teaching system, to see it lapse and all their efforts go for naught when the service changed. We may suspect that this campaign is inspired by the remorseful spirit of some departed surgeon, like Hamlet's father's ghost, ''doomed for a term to walk the night and for the day confined to fast in fire''. Perhaps!—We cannot, however, find a scrap of evidence to support this fancy.

In all seriousness, it does seem worth while to know where we stand in the eyes of disinterested and competent critics. If a business system, with its checks and safety features, can be applied to professional work, those who trust in us, ought, of course, to have the benefit of such a system. If the faith system is not the best system for the patients, of course it ought to go. A business system is a system of checks and audits. A faith system applied to hospitals trusts that the superintendent and every member of the staff, once appointed, will do his best without any auditing or supervision of his work by the managing board. A business system insists that all the activities of the hospital shall be audited and a report made to the managing board at the board's regular meetings. The faith system, according to the reformers, is intrenched in the ancient castle of conservatism, over the entrance to which might be written, ''As it was in the beginning, is now and ever shall be.'' A business system owes no allegiance to a ''slip-shod'' system because of the latter's honored lineage. The reformers insist that the end-product of professional work is quite as important as the economics of the hospital, and that the professional work will not rise to its highest level until it is audited, and followed up with regularity by a competent auditor or an auditing committee, which reports to the directors regularly.

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* E. P. Lyon, Ph.D., M.D., Minneapolis.

Such are some of the arguments of reformers, voiced in different phraseology, from many sources. The reformers may not be all equally well informed, they do not agree in all things, nor do they all speak with equally fair moderation. Doubtless there might be something said on the other side.

The business system applied to professional work is of comparatively recent origin. Most of the progress in medicine and surgery for the past hundred years has been made under the ''faith'' system. We admit that much has been accomplished. ''In spite of the system'' the reformer retorts,—but we know that the ''honor system,'' much extolled by psychologists, is a near kin to the ''faith system.'' Under a sense of responsibility and honor the best men do their best work, regardless of praise or blame. Stimulated by a sense of honor and responsibility, young men fresh from medical schools have done first-class work and faithfully written comprehensive time-consuming records, with no expectation that these records, with occasional exceptions, would be praised, blamed or even read by the chiefs of staffs.

We know that it is not essential for a man to hold a professorship in a medical school to be a teacher, even a first-class teacher. We have such men on our own staff. In appointments and promotions, it may be true that the teaching qualifications have not been sufficiently considered. We have no sympathy with the idea, sometimes asserted or implied, that a municipal hospital is handicapped and must be handicapped, by political considerations. When the trustees of a hospital accept and adopt the principle of a ''closed'' staff, they invalidate every excuse for inefficiency. Efficiency is the one adequate defense of a ''closed'' staff for a municipal hospital. When 50 men are selected from a profession numbering 300, because of their supposed fitness and given special privileges in a municipal hospital, denied to the 250 remaining members of their profession, they assume grave obligations, and the directors assume the responsibility of holding them to whatever system observation and experience prove to work out best for the patient. This, we think, will be accepted as a self-evident truth whether or not we endorse all the ideas approved by the American College of Surgeons. Whether or not any change in our own organization is recommended, we should dissent from any implication that a municipal hospital, *per se*, is handicapped by political considerations. Nothing in the history of our hospital warrants such an assumption. Nothing in the past tends to show that the people of our city do not want the best for their money. Nothing indicates that the citizens of any live municipality will fail to back the trustees in any move for the betterment of their hospital service,—providing, of course, that the hospital has not been made to serve the political fortune of any city or hospital official.

While we believe this is the simple truth, we are mindful that medicine and surgery are not exact sciences. We realize that the temperament and constitution of each patient are important factors—often unknown quantities—in the equation. We know that it will require a broader judgment to audit professional work than it does to audit the financial activities of a hospital. And yet, the claim is made that it can be done without hurting any man unless it may hurt the feelings of the hypersensitive. How best and by whom may professional work be audited and results followed up is an interesting problem for each hospital.

The viewpoint of an able and sensitive surgeon, who has given years to the service of a hospital working under the faith system,—which he regards as an honor system,—may be different from that of the reformers. He may see no reason why his time, much in demand, should be given to details plus the reading and criticizing of case records. He may be willing to teach objectively, but not by time-consuming precept. He may feel that teaching, in its ordinary sense, should be left to those with adequate salaries,—to those not dependent for an income on an exacting private practice. He may feel that the audit system cannot be fairly applied to professional work unless an auditor be provided endowed with omniscience. His experience with professing reformers may cause him to misjudge the campaign in prospect.

The American Medical Association, the Catholic Hospital Association, the American Hospital Association, and the Massachusetts Medical Society are enlisted for the reform as allies of the American College of Surgeons. Each organization has a committee to help the hospitals in the study and solution of the problems involved.

Original Articles.

SURGICAL SUTURES AS CAUSES OF WOUND INFECTION.

By W. H. Watters, A.M., M.D., Boston,

Boston University.

A brief paper upon a subject that at first thought appears so trite, may seem entirely unnecessary at the present time. So frequently has there been an apparent misapprehension of the facts involved, even by some of the most progressive surgeons, that a few paragraphs upon the topic will not be amiss.

During the past twenty years the writer has been in continuous and intimate connection with laboratory work, and during this time has made literally thousands of tests of various kinds of suture material. He has also made bedside and bacteriological studies of large numbers of patients with surgically infected wounds, and has endeavored to trace them to some adequate cause. As a result, much useful information has been obtained, some of which it will be endeavored to hereby set forth.

Of the various sutures commonly used, catgut, silkworm gut, silk and, more recently, linen, are the principal. And of these, catgut, in one form or other, is the most important.

Why the name "catgut" was ever given to this product of the sheeps' intestines is an unsolved problem, inasmuch as cats' intestines, similarly treated, do not make good or satisfactory sutures. These intestines, suitably cleaned while fresh, and immersed in a preservative, are sent to the catgut manufacturer as soon as possible. They are then passed through the scraping machines, again cleansed, and the resultant filamentous tubes twisted with one, two or more other tubes, dependent upon the size required. These strands are then fastened in a horizontal position, somewhat stretched, and allowed to dry, the fat having been previously extracted by suitable means. They are then polished, cut down, graded and put through one of the various procedures for sterilization. It should be noted that each length of catgut represents all that is left of an entire piece of intestine of equal length. As such it represents a potential central space or cavity that has in the past been the container for fecal material, a great bulk of which is, of course, bacteria. It is easy to understand the difficulty of properly cleansing the interior of such a tube that cannot be laid open. Large numbers of these bacteria must, therefore, inevitably be carried into the dried product, even under the most favorable circumstances. Among these bacteria are often found tetanus bacilli and spores and other very resistant forms of bacterial life. In the sterilization of the product, therefore, it is essential to use measures that will kill not only the ordinary bacteria, but those must be utilized of sufficient power positively to kill every form of bacterial life, however resistant.

Catgut is, therefore, most difficult of sterilization. Silkworm gut, a somewhat analogous product from a certain variety of silkworm, is less liable to serious infection on account of the very different bacterial flora of its producer. It is more readily sterilized. Linen and silk are even more easy to render aseptic, both because they are originally more clean and because they can withstand procedures positively ruinous to catgut. All sutures, before being suitably prepared, must be subjected to conditions definitely fatal to anthrax and tetanus spores and must thereafter be protected from any possible infection till ready to use.

What are these conditions? Spores are much more resistant to unfavorable conditions than are bacteria, and procedures readily fatal to the latter have no deleterious influence on the former. Thus, while most bacteria succumb to a short exposure to 65-70° C., many spores can withstand a temperature of 120° C., 130° C., or even 145° C. for a certain time. A similar variation is seen with chemical disinfection. It should be here noted that for a proper sterilization of any suture, conditions must be brought into action far more rigorous than those necessary to kill the non-spore-bearing bacteria.

Now let us look briefly at the bacteria of wound infection. What are the most common? The answer promptly comes,—the groups represented by the staphylococci, the streptococci, and the colon bacilli. Of these, the staphylococcus group is encountered much more frequently than all the others combined; either in the doubtfully virulent staphylococcus epidermidis albus, or the more active staphylococcus pyogenes albus, or the more intense staphylococcus pyogenes aureus, one finds a rapidly growing but absolutely non-sporogenous organism, and one whose resistance to unfavorable surroundings is limited. Heating to 100° C. (boiling) will definitely kill them in ten minutes, while 80° C. for five minutes, or 55° C. for one hour, is equally efficient. From the standpoint of antiseptics, a 1% carbolic kills in 30 minutes, as does a 1-200 peroxide of hydrogen and 1-1000 mercuric chloride. Even 50% alcohol proves efficient in a few hours. If the staphylococcus is readily killed, our problem with the streptococcus is much easier, as its vital resistance is even less. Twenty minutes' exposure to a temperature of 55° C. is definitely fatal, while the various antiseptics enumerated above prove efficient in from one-quarter to one-half the time required by the staphylococcus. Except for its ability to withstand weak acids, the colon bacillus ranks in vital resistance with the streptococcus. All three of these organisms, therefore, have been shown to be easily and readily eliminated by either thermal or chemical means, either of which is inexpensive. Simple boiling (of boilable material) or sufficient immersion in alcohol or other common antiseptics is entirely efficient for the purpose of excluding these organisms. Please note that this is no plea for simple and perhaps careless disinfection,—far from it. These measures, effectual though they may be against the pyogenic organisms, are not by any means capable of destroying all spore-bearing bacilli, and so should never be depended upon alone. If they are, other diseases, tetanus in particular, are bound to appear.

The plea of this paper is to recognize the fact that in our endeavors positively to eliminate sporogenous bacteria we go far beyond the point where any of the ordinary pus-producing organisms could exist. Of course sutures, like any other material, can be improperly handled after coming from the sealed container, and thus prove infectious. Also a suture, by being too tightly tied, may favor development of some slightly virulent skin staphylococci in the resultant improperly nourished tissue.

Apart from these contingencies, entirely due to others than the manufacturer, one may say that ordinary wound infection due to the sutures employed is an occurrence that may be entirely disregarded. Instead, therefore, of first bringing the suture material into question in a case of wound infection, one may say that the chances of such being the cause are so slight as to be entirely negligible.

A PLEA FOR A QUICK BACTERIOLOGICAL DIAGNOSIS OF DIPHTHERIA.

By E. A. Beckler, Boston,

Bacteriologist, Massachusetts State Department of Health.

The bacteriological diagnosis of diphtheria is now made practically throughout the country. Methods of examination of cultures, however, differ considerably in different laboratories. The usual custom is to examine cultures that have been incubated from 12 to 14 hours, and usually Wesbrook's A & C & D types, granular and barred, are looked for. Löffler's methylene blue seems to be the usual stain used, on account of its simplicity, although the Neisser and Kinyoun stains have considerable vogue. The latter are of especial value in accentuating the granules usually present in some bacilli of every culture. The writer believes that positive cultures are incubated longer than is necessary in many laboratories before a diagnosis is made. The custom of the Massachusetts State Department of Health is to examine all swabs that are sent for diagnosis for diphtheria. No blood serum is sent out to physicians, because it has not been found possible to keep the State supplied with fresh, moist serum. A culture is made at once upon receipt. Before replacing the swab in its tube, the material left is smeared in a small drop of water on a slide. This takes but little time, as long slides, on which 12 to 15 smears can be put, are used. These are stained with Löffler's methylene blue and examined. As many as are positive are reported at once by telephone to the attending physician. The cultures that have been made are then examined in the afternoon after from 1 to 8 hours' incubation. As the mail is received several times during the day, the cultures are of different ages. For this second examination, a very small drop of water is used, and the smear spread out only slightly so that the growth may be concentrated in a small area. Certain cultures which have not shown the bacilli on the swab, are often positive after a few hours. For this diagnosis one relies on the typical shape and grouping of the bacilli. Granules are not shown as a rule, so that special granule stains are of no value. B. diphtheriae in a young culture is very characteristic, however, and it usually outgrows other bacteria, including diphtheroids, during the first few hours, so that it is more readily seen than in some older cultures.

From an examination of over 30,000 cultures received for diagnosis, of which over 3000 have been positive, it has been possible to diagnose 83% of these the day the cultures were received, 60% on the swab, and the remainder from cultures from 1 to 8 hours old. The 17% that have not shown the bacilli on the swab or young cultures have been, for the most part, cultures received in the late afternoon, which have not shown growth before the laboratory closed for the night. Perhaps if physicians made a special effort to take good cultures, a larger percentage could be reported the day of receipt. No negatives are reported until they have been incubated at least 14 hours. The State Laboratory receives cultures principally by mail, so that there are inevitable delays before the culture is received. For this reason, this method has been adopted, so that there shall be as little delay as possible in the laboratory. It would seem as though local laboratories should be able to report practically all positives the day the culture is taken. Undoubtedly mistakes are made, but there are probably no more than would be made with older cultures. Often a culture that has been very characteristic at five hours is almost overgrown with other organisms after 15 hours, and might have been called negative if careful search had not been made for the bacilli.

There are no new suggestions offered, but laboratories that have not become accustomed to the appearance of young diphtheria cultures, are urged to examine them. The time spent in this triplicate examination is slight compared to the probable value of an early bacteriological diagnosis of diphtheria.

THE MODERN TREATMENT OF TUBERCULOSIS.

By H. F. Gammons, M.D., Carlsbad, Texas.

The treatment of tuberculosis at the present time should be considered under two headings: firstly, treatment by the general physician, and, secondly, treatment by the tuberculosis specialist. There should be a closer coöperation between the general practitioner and the tuberculosis specialist in the future than there has been in the past.

The average patient is unable to employ a specialist, but the specialist could see the patient at intervals and outline to the patient's physician a line of treatment, and by this coöperation of the specialist and general physician there will result greater good to the patient, and increased confidence in the general physician by the patient.

We realize that a great amount of the good to be accomplished in the anti-tuberculosis campaign must be due to the efforts of the general physician. It is not necessary for him to know the pathology, physiology, etc., of tuberculosis, or to be able to interpret the finer physical signs in the chest or, furthermore, to administer artificial pneumothorax or tuberculin. However, it is necessary for him to know the fundamentals of correct and early diagnosis and treatment.

Hawes[1] of Boston shows how the general practitioner can best make an early diagnosis, by observing the constitutional symptoms, rather than by trying to discover broncho-vesicular breathing or crepitant râles, however desirable the latter course might be.

The general physician of today and the past has over-treated his tuberculous patients, and has used the methods of treatment—good, bad and indifferent—that any or all authors have advocated. Tuberculin fell into disrepute on account of this very reason. The general physician felt that he had a cure in this agent, and used it in all cases, regardless of the condition, and as a result he caused a sloughing off of tissues that could have been repaired, and a dissemination of the disease, with resulting fatalities.

Unfortunately, the same condition exists today, namely, that many doctors are giving tuberculin to all of their tuberculous patients, regardless of the indications, and in their enthusiasm they are pushing their patients nearer the grave. I have recently seen a number of cases of pulmonary tuberculosis who have been treated by tuberculin by their general physician, and practically all of them have been apparently made worse.

I do not want to lead one to believe that tuberculin is not to be used at all, for such is not the case. A review of the literature shows many fine results in all forms of tuberculosis treated by tuberculin, but here it was administered by the specialist.

It is not expected that the general physician, with his numerous duties, can be thoroughly acquainted with all the sciences of tuberculosis, and, not being able to interpret the effect of different treatments, he should not use them. Every case of tuberculosis should have every possible help in getting well, and it is by the cooperation of the general physician and specialist that such things will be made possible and great mistakes will be prevented.

Ever since the rest treatment was advocated in this country by Trudeau many have realized its importance. However, there are many who have advocated the outdoor air and exercise as the most necessary factors in arrest of tuberculous processes. Still others have advocated rest and graduated exercise. Pratt[2] emphasizes the importance of prolonged bed rest in treating tuberculosis. I believe the physiological effect of exercise is more beneficial to some cases than is rest, but as it is impossible to pick out these cases, and as rest cannot do harm, it is advisable to have plenty of rest, according to the patient's make-up, some doing better resting in a reclining chair, and others resting better in bed.

As soon as the diagnosis has been made, the general physician should institute treatment, whch is, as a rule, rest, and he should educate and guide his patient continuously. Too many physicians have made the diagnosis, and then given the most general and superficial advice, and have implied by their words that it is now up to the patients to do as they have been told. The tuberculous patient needs a guardian, and this is the part that the good sanatorium plays in the patient's cure.

The general physician should see that his tuberculous patient has rest in bed, fresh air, well-mixed diet of moderate amount, sunshine, optimism, and frankness.

The general physician should not give tuberculin, vaccine, artificial pneumothorax, creosote or exercise, unless by the direction of the tuberculosis specialist.

Opiates are often indicated for uncontrollable cough and hemorrhage, but a continuous hemorrhage can often be best relieved by artificial pneumothorax. Rest will cure the night sweats, cough and pains in the chest; rest will also decrease the sputum, as well as stop all toxic symptoms, and nature will do the rest in the ordinary case by developing fibrous walls around the tubercles and calcifying the necrotic areas.

The part the specialist plays in the treatment of tuberculosis is the application of the natural processes laid down for the use of the general physician, supplemented by the use of artificial pneumothorax, tuberculin, vaccines, laryngeal treatments, surgery, and graduated exercise.

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Medical Progress.

PROGRESS IN GYNECOLOGY.

By Stephen Rushmore, M.D., Boston.

Vesicovaginal Fistula.

Frank[1] discusses the principles governing the spontaneous closure and operative repair of vesicovaginal fistulae. Nineteen cases are reported, which were operated on by several surgeons at the Mt. Sinai Hospital, and three in which the fistula closed spontaneously. The preparation of the patient for operation and the operative technic are described. Frank emphasizes the fact that free mobilization of the bladder is the most important single condition for success. If the bladder is freely movable the fistula will doubtless heal spontaneously in many cases. An inverted T incision, as for interposition of the uterus, is most satisfactory as a routine procedure. Suture is usually in two layers with chromic catgut and silk. If there has been destruction of the urethra or vesical sphincter, and repair is almost impossible, interposition of the uterus gives the least unsatisfactory result. In one case a minute fistula, persisting after the closure of a large hole, healed, following treatment with the d'Arsonval current for ten seconds. Following the operation the retention catheter should be employed and if a leak develops, the use of the catheter should be employed for several weeks.

Ward[2] discusses the operative treatment of inaccessible vesicovaginal fistulae. Such lesions he thinks are becoming more frequent owing to the more common use of the extended operative removal of cancer of the cervix, and the introduction of the Percy cautery. The method which has been used by Gray to obtain adequate exposure is the Schuchardt paravaginal incision which is well illustrated and contrasted with the more frequently employed "episiotomy." This incision is properly emphasized as "our most effective means of obtaining free access to the vaginal vault for operative procedures in difficult cases."

Free mobilization of the bladder is also necessary, and may be obtained most easily by establishing a plane of cleavage between the uninjured vesical and vaginal tissues. To establish this plane a crucial incision is made in the anterior vaginal wall, beginning near the urethral meatus and having its transverse bar at the fistula. By freeing the vagina from the bladder near the urethra first and gradually dissecting upward to the fistula, this object is accomplished. The use of a sound in the bladder to displace the bladder injury downward is recommended. In suturing, if the two lines of suture, bladder and vaginal walls, are not superimposed, the chances of healing are decidedly better. Three cases successfully operated on are reported and there is a brief review of some points noted in the literature.

Peterson[3] gives a method of treatment for inoperable vesicovaginal fistulae. It is not original with him, but a search in the literature indicates that attention should be drawn again to its value.

By inoperable cases are meant those in which the sphincter of the bladder is destroyed by trauma of childbirth, operation for cancer of the urethra, or any other cause. If the sphincter is destroyed, even if the fistula may be closed, function cannot be restored. The operations for transplanting the ureter into the bowel are generally unsuccessful because of ascending infection. The Maydl operation, using a part of the bladder wall around the ureteral orifice, is the best, but it is a serious operation with a distinct mortality.

The method advocated by Peterson is the formation of a rectovaginal fistula with closure of the vagina at its outlet, below the fistulae. Forty-one cases in all are collected and reported briefly. The operative procedures are not dangerous, and the results are satisfactory for a condition which does not threaten life but makes it very miserable.

Primary union is difficult to secure, but the wound nearly always healed finally. The rectovaginal fistula shows a tendency to contract, so that it should be made large,—large enough to admit two fingers easily. The rectum can be used as a substitute for a urinary bladder without giving rise to a rectal irritation. The urine does not give rise to uncomfortable diarrhea, although the stools are somewhat softened by the urine. At times small amounts of liquid feces are passed with the urine. The urine is held for two or three hours as a rule, sometimes for only one, sometimes six hours.

Of special interest are the effects on the uterus (in case of menstruation) and on the kidneys. There is no evidence that infection of the endometrium or of the kidneys takes place. The disadvantage of the operation, that copulation bcomes impossible, in general would not weigh heavily against the patient's great comfort from urinary continence.

Prolapse of Uterus.

The occurrence of uterine prolapse in children is of such unusual occurrence that Pollock[4] reports a case which came under his observation. The patient was a negro of 13 in whom a vaginal protrusion had been noticed since 8. This had become much more pronounced of late and was troublesome on walking. Both vaginal walls and the elongated cervix protruded from the vulva. The uterine body was in anteflexion and within the pelvis. On pushing back the prolapsed organs it was found that the puborectal portions of the levator muscles were atrophic.

The operative treatment consists of anterior colporrhaphy with oval denudation, perineorrhaphy according to the method of Emmet, and laparotomy.

On opening the abdomen the uterus was found to be small and anteflexed, the ovaries were cystic, the tubes infantile in type and the seat of purulent inflammation (gonorrhea). The posterior cul-de-sac was very wide and deep and filled with intestine.

To prevent the intestines from entering the cul-de-sac it was obliterated in sections from below upward. The posterior peritoneum was attached directly to that of the posterior surface of the broad ligaments. After resecting the tubes the uterus was tipped forward by suturing the round ligaments over the tubal stumps.

Three months later the anatomical result was very good except that the uterus lay in first degree retroversion, perhaps owing to the pull of the sigmoid which had been attached to the uterus in obliterating the cul-de-sac. Two points are especially to be noted. There was a distinct levator action, though at the time of the operation it seemed as if the levators were absent. Also the pelvic cavity was free from intestines.

Prolapse of the uterus in children is due to defective development, and spina bifida is the developmental anomaly most frequently found associated with it. Although x-rays were taken no trace of spina bifida could be found in this case.

Other anomalies, however, were present,—a wide and deep cul-de-sac, infantile tubes, pelvis infantile in shape and size. The spinal column and the lower extremities were deformed, the hard palate was highly arched and the mentality of the patient was far below normal.

Williams[5] reports a case of prolapse of the rectum associated with prolapse of the uterus, and notes the principles to be kept in mind in operating.

The patient was a multipara of 40 who, 14 years before, at her first labor terminated by instrumental delivery, received a complete tear of the perineum which did not unite.

For five years there had been prolapse of the uterus, for one year of the rectum also, which had been irreducible for one week.

On examination, the patient was found to be in poor general condition, with complete prolapse of the uterus and vagina, and prolapse of the rectum for seven inches outside the anus. The complete tear extended one inch up the rectal wall.

The operation was performed in three stages. At the first the prolapse was reduced under ether. About three weeks later the abdomen was opened and the whole uterus removed. The vaginal walls were suspended to the anterior sheath of the rectus abdominis. The upper portion of the rectum and the sigmoid were sutured to the posterior wall of the vagina and to the abdominal wall, thus fixing the bowel and obliterating the cul-de-sac.

At the third operation the perineum was repaired.

Fourteen months later the patient said she had been well since the operation, and has had no recurrence of prolapse or cystocele. Perineum solid, good sphincter control. Small hernia in laparotomy scar (incision suppurated following second operation).

While mild cases do not need such extensive operation, extreme cases demand treatment similar to that given in the author's case, and based on the following principles:

(1) Ventral fixation of the pelvic fascia (Williams prefers to remove the whole uterus first, but this is not always necessary).
(2) Fixation of the rectum to the pelvic fascia.
(3) Obliteration of the cul-de-sac.

All operations should be completed by repair of the sphincter ani and perineum, if damaged.

Fatty Tumors of the Uterus.

Elkin and Haythorn[6] report a case of fatty tumor of the uterus and review the literature briefly. Fatty tumors of the uterus are so rare that they are of little interest clinically. Yet from the point of view of histogenesis they may attract much attention. The term "fatty tumor" rather than "lipoma" is used because of the specific meaning of the latter word, and the difficulty in determining in some of the fatty tumors described whether they were truly lipomata.

Fat cells are perfectly definite cells, differentiated from mesenchymal cells and are neither fibroblasts nor derived from fibroblasts. As no fat cells occur embryologically in the uterus, a true lipoma must be formed from embryonic displacements of fat cells.

"The difficulty lies in our inability to say that the large fat cells were not derived from connective tissue cells. The fibrogen fibrils, which are the only definite means of identifying connective tissue cells, could not be demonstrated in connection with fat cells, and aside from the globular fat contents we know of no characteristic structures by which to identify a fat cell, so that we could not be sure that after all we were dealing with true fat cells."

After carefully analyzing the evidence which this tumor presented, Elkin and Haythorn came to the conclusion that it was best explained by the hypothesis of lipoblastic development and that the tumor should, therefore, be called a lipoma, or better, lipoblastoma.

Uterine Hemorrhage.

The tendency at present is to use as few therapeutic measures as possible. Occasionally some valuable procedure of limited applicability will be discarded, and zinc chloride is a caustic which is now looked at askance by surgeons. Boldt[7] advocates its use in certain cases of uterine hemorrhage, "particularly when caused by uterine myomas and metro-endometritis or fibrosis uteri." In suitable cases, after malignancy is excluded, intrauterine application once in four weeks will cause permanent amenorrhea. While one application is usually sufficient, more may be necessary.

The technic is simple. A special form of intrauterine applicator syringe is employed. The medicament is drawn into the syringe,—the applicator is smeared with petrolatum and wrapped with a narrow strap of gauze 1–2 inches wide and 12–24 inches long. The instrument is introduced to the fundus, 4 or 5 drops expelled, the cannula slightly withdrawn and used as a packer in packing in gauze, 4 to 5 drops again expelled and the packing continued until the uterus is full. The gauze should be left in for three days. Care should be exercised to prevent excess of zinc chloride from reaching the cervix where stenosis may occur.

Boldt does not describe exactly the limits of applicability of this procedure, although recommending it highly.

Pelvic Infections.

Clark and Norris[8] give the results of their study of over five hundred cases in which the postoperative and remote results of surgical intervention in pyogenic infections in the fallopian tubes were considered. These tend to confirm the opinion, now well established, that operation in the acute stage is contraindicated. A course of conservative preparatory treatment decreases the mortality and enhances the chances for securing a good functional restoration of the pelvic organs.

In a large majority the temperature subsides, the pain disappears, the tubal enlargements decrease and may become impalpable. If the patient is seen in her first attack no operation is advised. If there is a recurrence the same conservative treatment is followed, but when the symptoms have subsided operation is advised. Usually both tubes are removed and the ovaries are conserved.

If the symptoms do not subside under the conservative treatment, vaginal drainage is instituted, either by direct incision into the cul-de-sac or through the guidance of an abdominal incision. It is probably very rarely that a patient dies under the conservative treatment—none in the present series. If the symptoms do increase in severity there is ample time for a simple drainage operation. Drainage through an abdominal incision should be resorted to only if it cannot be avoided.

When the acute attack has subsided it is possible to determine more exactly the extent of the involvement of the tissues, and, if conservative operating is indicated, it can be performed more satisfactorily.

Conservative operative procedures, instituted with a view to restoring a closed fallopian tube, seldom restore fecundity and should, therefore, be undertaken very rarely. Conservation of ovarian tissue should be limited chiefly to women under thirty years of age.

In sexually mature women, if chronic infection of the uterus and adnexa is present, hystero-salpingo-oöphorectomy is followed by a lower mortality and greater certainty of restoration to health than are conservative operations.

In the discussion of treatment, Clark and Norris strongly condemn the method suggested by Coffey of walling off gonorrheal infection in the pelvis from the general cavity by means of a "quarantine pack." The use of the pack entails a certain amount of danger and is quite useless because generalized gonococcal peritonitis is very rare.

Cullen[9] describes the surgical methods of dealing with pelvic infections. While he presents little that is new, some of the methods are so firmly based on knowledge of anatomy and pathology, and apparently so little known generally, that they should be emphasized. The placing of a pelvic drain during an abdominal operation sometimes presents serious difficulties to the operator. As a rule it is quite simple,—one cuts through the cul-de-sac into the posterior vaginal vault. To make this incision easy a long curved clamp is introduced into the vagina by an assistant, who makes pressure upward and backward against the posterior vaginal vault. There is seen from above a small mound in the pelvis, easily incised with knife and scissors. Troublesome bleeding is most unusual. Through the incision the point of the clamp is passed, grasping the drain which is pulled down as far as necessary. If the opening made by the incision is not sufficiently large, it may be increased in size by stretching with the clamp or by a uterine dilator from above. The use of the long clamp in this way needs careful attention. In one case, reported by Cullen, the instrument had been introduced into the bladder; in another into the rectum—inconvenient, but not especially dangerous, accidents.

Removal of vaginal drains after abdominal operations should not be attempted until the fourth or fifth day, because intestinal coils which may adhere to the gauze will spontaneously loosen about that time. If intestine is adherent, and the gauze should be so placed, if possible, that the two will not come in contact, it may be drawn down into the vagina, with serious results.

If the pelvic infection has resulted in one or more abscesses which may be opened through the vaginal vault, the abscess cavity should never be irrigated. Occasionally infection will be spread to the general cavity in this way, and irrigation is quite unnecessary.

In the case of post-puerperal pelvic infection, the course of the disease is different from that spreading primarily along the mucous membrane, and the foci of infection lie generally in the broad ligament on one or both sides. Access to such foci is more easy and more safe through the abdominal wall and by the extraperitoneal route, making the incision close to Poupart's ligament.

Miller[10] reviews the literature covering ligation or excision of the pelvic veins in the treatment of puerperal pyemia. Nearly two hundred cases are reported; some very briefly, some at length. The tendency of late has been away from this operative procedure which Miller thinks should be used more often.

The excellent results obtained in the treatment of pyemia of otitic origin, by ligation of the jugular vein, prompted operators to apply similar methods in pelvic pyemia. The results have not been as gratifying as in septic jugular thrombophlebitis, yet a careful consideration of the cases reported led Miller to think the outcome better than has been generally supposed.

Before drawing conclusions Miller attempts to answer four questions: (1) Can septic thrombophlebitis be recognized with sufficient accuracy to justify a serious operation? (2) Do the pathologic conditions revealed at operation and autopsy justify intervention? (3) What are the indications for operation? (4) Has the mortality been reduced by operation?

It would seem that septic thrombophlebitis has a fairly characteristic symptomatology and in a given case, presenting high temperature with pronounced remission, the absence of pelvic exudates and peritonitis, with the uterus empty and correspondingly involuted, a diagnosis should not be difficult. Some writers emphasize the importance of being able to feel the thrombosed veins.

Whether pathologic findings do or do not justify surgical interference depends on whether operative or autopsy material is considered. The latter gives terminal conditions and is less favorable. But the conditions at operation show a marked tendency for the thrombosis to limit itself to one vein, usually the spermatic.

The indications for operation may be summed up briefly: As soon as the diagnosis is fairly clear, if there are no evidences of peritonitis, broad ligament abscess, multiple metastatic abscesses, acute endocarditis, or pneumonia. Almost all of the cases showing signs of peritonitis died and few recovered that presented pulmonary lesions.

One hundred and ninety-seven cases are included in this series. Fifteen were treated by the extra-peritoneal, and 182 by the transperitoneal operation. The gross mortality (not including the vena-cava series) was 51.6 per cent. The corrected mortality (excluding unsuitable cases) was found to be 33.9 per cent. The average mortality of puerperal pyemia is generally accepted as between 60 and 70 per cent.

Pituitary Gland.

Goetsch[11] discusses the relation of the pituitary gland to the female generative organs, from the experimental and clinical aspects. He points out the danger, in discussions of the physiology and pathology of these organs, of engaging in pointless theorization and suggestions unless there is a firm basis of well-controlled experimental and clinical observations upon which to stand. He summarizes (not too briefly) the results which have hitherto been obtained. One paragraph on the clinical side may be quoted:

"As a result of the facts learned from the experimental feeding of pituitary extracts, particularly of the anterior lobe, we should feel encouraged in our efforts to benefit clinical states dependent upon under-function of this gland in the human. Thus, for example, a number of clinical cases showing, among other symptoms, characteristic sexual disturbances (irregular menstruation, amenorrhea, sterility), dependent on primary pituitary disease, have been so greatly benefited that there have been a return of menstruation and libido, even when these had been absent for a considerable period. It is probable that many clinical conditions showing genital aplasia, adiposity and under-development, and dependent upon changes in one or more of the ductless glands, other than the pituitary, would be benefited by the feeding of pituitary extract in addition to the extract of the gland which is primarily involved. On the other hand, the feeding of extracts, such as thyroid and adrenal, combined with pituitary in clinical cases of pituitary disease in which symptoms referable to these glands are present, is advisable.

Some alleged effects of pituitrin on the intestinal tract have been very striking, yet other investigation failed to reproduce effects under apparently similar conditions. It may be concluded from the literature that there is a wide variability in the physiological activity of various commercial pituitary extracts, and it has been suggested that there is in the posterior lobe of the gland some substance which has an action on the isolated intestinal loop of animals, resembling that of adrenalin, a substance which may be other than that which raises the blood pressure and causes diuresis.

Pancoast and Hopkins[12] studied the effect of pituitrin in a small series of patients from the medical wards, in whom there were no marked gastrointestinal symptoms, except the occurrence of constipation in a few. The patients were controlled and studied with great care, using the bismuth or barium meal and the x-ray to detect change in motility. This method is an accurate and valuable means of studying certain phases of drug action, and the findings are as follows:

In the stomach there was usually a primary depressing influence upon peristalsis or motility or both, followed by an increase in both. The same effect followed repeated doses. The pylorus was influenced very little, and when any effect was noted it was variable.

In the small intestine motility was, as a rule, either not affected or was slightly delayed.

In the large bowel the drug produced little or no appreciable effect on motility in the class of patients examined.

Ovary, Uterus and Mammary Gland.

Loeb[13] summarizes our present knowledge of the relation of the ovary to the uterus and mammary gland from the experimental point of view as follows:

"1. The ovary is a complex gland, of which the most important constituents are follicles in various stages of growth and atresia, and corpora lutea. In addition, we find in some species interstitial gland and sometimes embryonic structures developing parthenogenetically from eggs.

"2. Cyclical changes occur both in the ovary and secondarily in the uterus and mammary gland.

"3. The primary cyclical changes in the ovary are in sequence: follicle ripening, ovulation, corpus luteum formation. In some species ovulation is accompanied by degeneration of all but the smallest follicles.

"4. An elaborate self-regulating mechanism controls ovulation. Normally, the corpus luteum inhibits ovulation. During pregnancy the life of the corpus luteum is prolonged. Experimentally ovulation can be influenced at will, accelerated by excising all corpora lutea, or retarded by producing artificial deciduomata. The retarding action of the corpus luteum is chemical, not mechanical.

"5. The corpus luteum has a sensitizing action upon the uterus. This action can be analyzed by experimental methods. If the uterus is incised or mechanically stimulated at the time during which the corpus luteum is elaborating this growth substance, maternal placenta (deciduoma) is formed. The mechanical stimuli, therefore, assume in this respect the function which the ovum exerts under normal conditions. The form of growth response of each species is characteristic. The localization of sensitization varies in different species, being limited to the uterus in rabbits and guinea pigs, but distributed more widely in the human female. No specificity exists in the sensitizing substance given off by the corpus luteum as far as different individuals of the same species are concerned. The life period of experimental deciduomata is short, except in pregnancy, during which their persistence is prolonged.

"6. Corresponding to and dependent upon the cyclical ovarian changes, uterine cyclical changes occur. The cycle consists of heat, growth associated with glandular activity, regression and interval. Heat probably is due to maturation of the follicles and dependent upon the absence of the corpora lutea; growth activity is the result of corpus luteum secretion; regression marks the cessation of corpus luteum secretion, which is followed in the interval by a condition of rest. Pregnancy causing a persistence of the corpus luteum is characterized by an accentuation, but not a prolongation, of the active phase, and an inhibition of the uterine cyclical changes throughout gestation.

"7. While it is possible to produce, experimentally, during pregnancy a new ovarian cycle, through excision of the corpora lutea, such a new ovarian cycle is not followed by a new uterine cycle. During pregnancy a mechanism is at work preventing the uterine mucosa from responding to the stimuli given off by various ovarian structures.

"8. It follows from 4 and 5 and 6 that the corpus luteum subserves at least two functions, inhibiting ovulation and producing a substance which causes growth in the uterus.

"9. The ovary shows other non-cyclical functions. It has a trophic influence on the genitals and either primarily or secondarily determines the development of the secondary sexual characters.

"10. The ovary, likewise, controls the development of the mammary gland. It exerts a trophic influence on this organ and determines its normal cycle. During heat and subsequent to ovulation proliferative changes occur; these cease while the corpus luteum develops and functionates.

"11. The incidence of breast cancer in mice is greatly reduced by castration."

(*To be concluded next week.*)

RECENT DEATH.

Henry Jesse Kenyon, M.D., a Fellow of The Massachusetts Medical Society and a graduate of the College of Physicians of New York City, died at his home in Worcester, April 5, 1918, aged 66 years.

Society Report.

MEETING OF GENERAL MEDICAL BOARD OF COUNCIL OF NATIONAL DEFENSE, HELD IN CONNECTION WITH DEDICATION OF WARDEN McLEAN AUDITORIUM AT CAMP GREENLEAF, CHICKAMAUGA PARK, GA.

Dedication of the Warden McLean Auditorium at Camp Greenleaf, the military medical school at Camp Chickamauga, Ga., on March 11th was made notable not only because of the presence of the Surgeon-General of the Army and members of his staff, as well as many distinguished medical men from military and civil life, but also because of the regular meeting there March 10th of the General Medical Board of the Council of National Defense, usually held in Washington. About 1,000 doctors, who, as Medical Reserve Officers, are taking the three months' course, accepted the invitation to attend, extended by Dr. Franklin Martin, member of the Advisory Commission of the Council and chairman of the Board.

These members of the General Medical Board attended: Dr. Franklin Martin, chairman; Dr. William F. Snow, secretary; Surgeon-General William C. Gorgas, Dr. Victor C. Vaughan, Dr. William H. Welch, Dr. John Young Brown, Dr. John G. Clark, Dr. Thomas S. Cullen, Dr. Edward P. Davis, Dr. William D. Haggard, Dr. Jabez Jackson, Dr. Edward Martin, Dr. Charles H. Mayo, Dr. Stuart McGuire, Dr. John D. McLean, Dr. Hubert A. Royster.

Introduced by Dr. Martin, Surgeon-General Gorgas said he knew of no more important work than the activities being developed at Camp Greenleaf; that the necessity of military medical training is obvious; also that on a visit to England five years ago he learned that the great developments in the English system had been forced by the necessities arising during the Boer War; so, he said, the United States military medical service is being developed by the exigencies now confronting us and would continue after the war. He said he gained from the British Service ideas of value for his administration.

Dr. William H. Welch read a statement giving illuminating figures as to the status in the Army and Navy. Men enrolled in the Medical Officers' Reserve Corps, and recommended to the Adjutant-General's office, totaled 21,824, of whom

17,313 have accepted their commissions. Of 5,378 recommended in the Dental Reserve Corps, 5,086 have accepted. Of 1,067 recommended in the Sanitary Corps, 865 have accepted. Of 152 recommended in the Ambulance Service, 138 have accepted. There are 844 officers in the Naval Medical Corps and 103 in the Naval Dental Corps. There are 827 medical and 199 dental officers enrolled in the Naval Reserve Force. There are available in the Naval Medical Reserve Corps, retired officers, acting assistant surgeons and national naval volunteers, naval militia and coast guard, 284 men. Total officers available for active service are 2,257. There are 207 chief pharmacists and pharmacists, 7,000 hospital corpsmen in the regular service and 1,000 in the reserve, making a total available for active service in these branches of 8,207. In February there was an exceedingly satisfactory decline in the admission rates for communicable diseases, as well as for all causes. In the force afloat, the situation as to pneumonia and cerebro-spinal fever is very satisfactory. Scarlet fever has been slightly more prevalent than usual but in no sense epidemic; a very satisfactory decrease in measles; mumps continues as heretofore. In the fleet there were 1 case of cerebro-spinal fever, 20 of German measles, 35 of measles, 167 of mumps, 26 of scarlet fever, 43 of pneumonia, lobar and broncho. Health conditions afloat are highly satisfactory.

Dr. Martin, in expressing the regrets of Surgeon-General Braisted, of the Navy, who was unable to be present, said: "I was in Admiral Braisted's office one morning and found him getting reports by telephone from his various naval stations. From 8.30 to 10.30 o'clock every morning he receives these reports, and gives instructions, thus keeping in constant touch."

Before introducing Passed Assistant Surgeon C. P. Knight of the United States Public Health Service, who reported in the absence of Surgeon-General Blue, Dr. Martin read the following telegram received from General Blue:

"Washington, D. C., March 9, 1918.

"Dr. Franklin Martin,
"Chattanooga, Tenn.

"Request that you give publicity to the fact that Public Health Service is greatly in need of the services of competent sanitarians, particularly medical officers, sanitary engineers and scientific assistants. Salaries vary from $1,800 to $2,500 per annum. Applicants should address Surgeon-General, United States Public Health Service, Washington, D. C., stating in full experience and training which they have had.
Blue."

Surgeon Knight's report summarized the good work done under his direction since September, 1917, in the five-mile zone around Chickamauga Park, a zone having a 100,000 population, including 60,000 in Chattanooga. Concrete results included: Inspection of 375 restaurants, of which 148 complied with the regulations; 39 barber shops, of which 29 have been furnished cards indicating full compliance; anti-fly campaign; examination of 2,500 employees of restaurants, barber shops and dairies, 3% being dismissed because of having communicable disease; complete survey of 3,000 rural homes, accompanied by educational talks resulting in orders for installation of sanitary privies; complete survey of private water supplies; inspection of all industrial plants, with corrections under way; submission of fuller reports by physicians, and all reported cases being tabulated and investigated; inspection of all dairies; pasteurization of about 30% of milk supply; eating establishments compelled to serve pasteurized milk; thorough medical inspection of Chattanooga schools and intensive rural school surveys recommended; providing Chattanooga with full-time physician and 6 Public Health Nurses by the U.S.P.H.S.; establishment of unit for treatment of venereal diseases; conference with Attorney-General of Tennessee which led to Governor Rye's order to Chattanooga Board of Health to proclaim venereal diseases a menace to the civil and military population, and directing it to make regulations for control in coöperation with the Provost Marshal, and steps under way to make this a state-wide campaign; and introduction and passage of ordinances in adacent counties providing sanitary sewage disposal. Lieutenant-Commander Knight has been made a deputy health officer by county and city authorities.

Dr. William D. Haggard, of Vanderbilt University, read a statement for the Red Cross which showed that there are 20 base hospitals on active duty abroad and 14 others mobilized of 19 certified as ready for immediate service. Distribution of sweaters to soldiers and sailors and all Red Cross sources totals at least 1,250,000. Authority for Red Cross work within camps has been conferred by an official order signed by the Secretary of War. Contracts for convalescent houses in 4 camps have been let and others will soon be signed. Twenty-seven sanitary units coöperated with federal and state authorities, in February, in 17 different states. The 4 laboratory cars, "Reed," "Pasteur," "Lister" and "Metchnikoff," have been turned over to the Army Medical Corps. Venereal clinics are now in operation in 17 camp cities.

Major William F. Snow, reviewing the work of the Committee for Civilian Coöperation in Combating Venereal Diseases, said that military medical advisers have been provided for state Boards of Health, municipal clinics are being placed, and an excellent moving picture film, "Fit to Fight," has been prepared to be shown at the camps as an educational measure.

Major Edward Martin, reporting for the Committee on States Activities, told of coöperation with the state societies in various ways. Reporting for the Editorial Committee, he mentioned the 6 manuals on medical military practice, all of which have been approved by the Surgeon-General's Office.

For the Committee on Surgery, Dr. Charles H. Mayo told how data on 21,000 physicians had been gathered and placed on cards convenient for the ready selection of individuals and groups suited for any given task, a duplicate set of which cards has been prepared for the use of the Surgeon-General's office in France. Dr. Mayo emphasized the need of reconstructing wounded men, not only for field service, but also for labor after the war, inasmuch as the usual tide of immigration has ceased. Citing the many Government activities in which medicine enters, he said these relations, he believed, could be coördinated in no way except by having a medical man as a Cabinet Officer. He closed with this plea for recognition of medical military men:

> "Medical men must have adequate rank. They are entitled to it. For it is not as if they were at work in the military service, doing work to which they are new and unaccustomed. They are working in the line to which they have given their lives. They can't do their best unless they have adequate recognition and rank."

In the absence of Miss M. Adelaide Nutting, chairman, Miss Ella Phillips Crandall, secretary, reported for the Committee on Nursing. The total nurses enrolled to date are 18,344, of whom 10,000 have enrolled with the Red Cross since April 6, 1917. The Red Cross had supplied the Army with 6,220 up to March 1, and 1,000 to the Navy and Public Health Service. As insufficiency of nurses in December was due in some camps to lack of housing accommodations, and in others to the fact that a larger quota had not been called for, the Committee recommended to the Surgeon-Generals of the Army and Navy that suitable accommodations be provided in adjacent towns where necessary; that there be a quota of not less than one nurse to 6 acutely ill men; that a reserve of 25 above the prescribed quota be stationed at each hospital; that Miss Anne W. Goodrich be assigned to inspect military and naval hospitals, and that superintendents of three-year training schools graduate the 1918 classes early. These recommendations received unanimous endorsement of the Executive Committee of the General Medical Board, the Surgeon-Generals and the Secretary of War, since which time all demands for nurses have been met. The Committee is continuing its campaign to attract young women into training schools and is coöperating in the courses to be given at Vassar College this summer for young women who shall have registered for entrance to a graduate school of nursing in October, these women then being eligible for graduation in two years instead of three. Appeals to training schools and professional registries, together with the Red Cross campaign for nurse enrollment, will, the Committee believes, readily provide the 5,000 additional nurses who, it is expected, will be required by June 1; and that the total of 37,500 graduates will be furnished as needed. The committee is seeking relative rank as recognition for Army and Navy nurses, they having all been provided for in the War Risk Insurance Law through the Committee's efforts.

Miss Crandall, also reporting for the Sub-Committee on Public Health Nursing of the Committee on Hygiene and Sanitation, told of an experiment in two states in coöperation with the Food Administration whereby Public Health Nurses are to have special instruction in food economics.

Dr. Jabez Jackson, of Christian Church Hospital, Kansas City, Mo., spoke of the need of nurses to take the place of experienced nurses who have gone into military service, saying that 12 out of 15 nurses had gone from one hospital in his city. He advocated special attention to nurse apprenticeship in hospitals.

Introduced as President-Elect of the American Medical Association, Dr. Arthur Dean Bevan expressed the confident belief that, whether the war lasts three years or five years and requires 3,000,000 men or 5,000,000 men, the medical profession will continue to stand by "until the job is finished." He said: "It is the one business of the American Medical Association to educate the profession to realize the extent of the work before it. At our great meeting in June I should like to have back with us such men as Osler and DePage to tell us at first hand something of their work and the need for such work as theirs on the other side."

Major John D. McLean told of the progress of the plans for the Volunteer Medical Service Corps, reading the conditions of membership. This body will be open to reputable physicians ineligible to the Medical Officers' Reserve Corps because they are over the age of 55, on account of physical disability, or because of necessity for home service, or other good reason. "An organization of the doctors at home to do a something when there is a something to do" was the way Dr. McLean summarized the function of this new organization which will act when called upon by the Surgeon-Generals of Army, Navy or Public Health Service. He emphasized the fact that this organization "will not protect slackers at home." Dr. McLean exhibited an attractive design proposed for insignia.

Lieutenant-Colonel Victor C. Vaughan, reporting for the Committee on Legislation, told of the request of the Army medical officers for higher rank and greater authority, and of the Owen-Dyer Bill (S. 3748 and H.R. 9563) now pending in Congress. He cited instances which he said indicated need for greater rank, and then read the following letter from President Wilson to Dr. Franklin Martin, endorsing the bill:

"5 March, 1918.

"My dear Dr. Martin:

"I read very carefully your memorandum of February twenty-seventh about the rank accorded members of the Medical Corps of the Army and have taken pleasure in writing letters to the chairmen of the Military Committees of the House and Senate, expressing the hope that the bill and resolution may be passed.

"Cordially and sincerely yours,
"Woodrow Wilson."

"Dr. Franklin Martin
"Advisory Commission
"Council of National Defense."

The dedication exercises on Monday morning, March 11, were attended by a throng which filled the auditorium to overflowing. On the stage was a notable group of army medical officers, with a sprinkling of civilian doctors of national and international fame. Lieutenant-Colonel Roger Brooke presided. Those on the stage included: Surgeon-General William C. Gorgas, Brigadier-General J. B. Erwin, in command of Camp Forrest; Colonel Henry Page, Dr. Franklin Martin, Member Advisory Commission, Council of National Defense, and chairman General Medical Board; Colonel E. L. Munson, Lietenant-Colonel V. C. Vaughan, Lieutenant-Colonel William H. Welch, Johns Hopkins University Medical School; Major Charles H. Mayo, president American Medical Association; Dr. Arthur Dean Bevan, president-elect American Medical Association; Dr. Edward P. Davis, Philadelphia; Major John D. McLean, Major Stuart McGuire, Major George E. de Schweinitz, and many others.

After music by the Camp Greenleaf orchestra and invocation by Bishop Thomas F. Gailor, Episcopal Bishop of Tennessee, Dr. John G. Clark, of Philadelphia, made the speech of formal presentation of the $10,000 auditorium on behalf of Mrs. Wm. McLean, whose son, Warden McLean, while in the officers' training camp at Fort Oglethorpe, was accidentally killed. Colonel Henry Page, who, since his graduation from the University of Pennsylvania School of Medicine in 1894, has been continuously in the regular army and whose efficient, untiring efforts have transformed the site which in 1898 was the dumping ground for the Chickamauga Camp, made the speech of acceptance. He said it is his ambition to have here a great postgraduate training camp, and that he hopes to see the temporary buildings replaced by permanent structures.

He was followed by General Gorgas, who argued convincingly for military training for medical officers. He said that notwithstanding handicaps, the present American Army has established a sanitary world's record, for it has cared for 1,000,000 men and the death rate is 10 men per thousand, whereas Japan, during the Russo-Japanese War, was deemed to have accomplished a marvel when she kept her death rate down to 20 per thousand. "This is but the beginning of Camp Greenleaf," he said. "This probably will be the focus of our medical activities." He said that Camp Greenleaf, located in the geographical center of 450,000 troops in training, seems the logical location for the one great medical training ground, with accommodations there possibly for 40,000 men, trebling its present capacity. He expressed a wish that the Council of National Defense might interest itself in such a project, and he said: "From past experiences I am sure of their interest."

Brigadier-General J. B. Erwin, the Commandant at Camp Forrest, adjacent to Chattanooga, in a happy speech indicative of the present cordial coöperation of the line officer with the medical branch of the service, evoked enthusiastic applause when he advocated a detention cantonment for the "laundering" of recruits before they are allowed to mingle with the men in camp—thus decreasing the chances of mumps and measles, diseases which, he said, are certain to break out wherever bodies of men are gathered in camp or barracks.

Lieutenant-Colonel Victor C. Vaughan recalled a visit to Berlin in 1907 and a talk with Wassermann, the German medical authority, in which the latter expressed a fear that the 50,000 soldiers quartered in Berlin and the other like units in other cities indicated that "some day" Germany's military leaders would plunge that country in war which might mean the dismemberment of the empire. Dr. Vaughan expressed the hope that some day he might walk through the streets of Berlin and see flying from public buildings the flag, not of France, nor of Britain, nor of the United States, but of the German republic.

Dr. Vaughan, reverting to conditions at Chickamauga as he found them in 1898, when there was not a single microscope nor test tube in the camp, contrasted those conditions with the fact that a medical camp has here been established. He contrasted the attitude of the line officer of those days with the work-together spirit of today.

Dr. Edward P. Davis, of Philadelphia, praised the spirit of the doctors in training, and reminded the audience that physicians really entered the profession of war when they became medical students. "You are soldiers by inheritance and training," he said.

A review in the afternoon of the 12,000 men in the various medical and sanitary units, with a field hospital demonstration, had a dramatic setting. From the knoll overlooking the parade ground from the east several score interned Germans, ranged behind the wire of their stockade, viewed the spectacle, while on the western side of the field was the immense crowd of civilian visitors who came by automobile and trolley. Well in their rear, towering high above, rose historic Lookout Mountain.

The Warden McLean auditorium building is situated in the center of Camp Greenleaf. Besides the main assembly hall there are several smaller rooms, including orthopedic museum, library and reference room, lecture rooms, study rooms and office. Since the opening of the camp 4,000 officers and 20,000 enlisted men have been trained and sent to duty abroad or to instruct at other camps.

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Book Reviews.

The Law of the Heart. By Ernest H. Starling, M.D., Sc.D. (Cambridge and Dublin), F.R.C.P., F.R.S. London: Longmans, Green and Company. 1918.

This pamphlet is a monograph representing the Linacre lecture given by the author at the University of Cambridge, England, in 1915. It is a physiologic study, based on the researches of Blix, into the molecular nature of heart action, and is illustrated with eight diagrams. It is a valuable brief summary of the knowledge of cardiac physiology, and a useful contribution to the substance of this knowledge. The author determines experimentally that within physiological limits, the larger the volume of the heart the greater are the energy of its contractions and the amount of chemical change at each contraction. In the heart, as in muscular tissues generally, the energy of contraction, however, measured, is a function of the length of the muscle fiber; and any increase in the extent of active surface increases the energy of change. In the healthy heart, the demand for increased action temporarily dilates the heart, thereby elongating its muscle fibers, and enabling each fiber to concentrate a larger number of active molecules on each unit of active surface than it could previously. This automatically improves the tone of the muscle, and thereby enables the heart gradually to return to its normal volume, even though still doing increased work. In the fatigued, diseased, or failing heart, however, the concentration of active molecules per surface unit becomes less and less, so that this surface must be continually increased by cardiac dilatation. If this process goes on sufficiently long, the dilatation may pass the optimum length of muscle fiber, and the heart must then contract at an increasing mechanical disadvantage, which leads to ultimate failure.

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THE STATUS OF TONSIL OPERATIONS.

In spite of the many modern advances in medicine very little, if anything, is yet known concerning the functions of the tonsil. Being a ductless gland, it has been thought to be part of the endocrine system, but no connection therewith has been found, and, indeed, removal of these glands seems to have no effect on the organism. There are those who believe the glands to be vestigial in character, now having no function at all, and best removed from the body whether giving symptoms or not. A plausible, though unconfirmed, hypothesis is that these glands act as mechanical barriers to the passage of irritating or infective agents. When it is remembered how often these glands are the seat of numerous infections, this hypothesis receives added weight. The tonsils are considered to be the portals of entry for many specific infections, but particularly of the infections causing rheumatism and endocardial conditions.

Tonsil operations have been carried out for a long time, but heretofore they have been very lightly undertaken. Practically no line was drawn between cases that needed removal and those that did not. Yet it goes without saying that unless a tonsil is so large that it obstructs the passages or is the frequent seat of inflammations, surgical interference is not justified, at least until more is known concerning the function of this gland. Moreover, tonsil operations are no longer undertaken by the unskilled. These operations have had a remarkable metamorphosis from minor to major surgical operations. This has in a measure been the natural outgrowth from the reports of increasing fatalities from these supposedly minor operations. The clinic, or even the home, is no longer considered a fit place for this operation any more than for other surgical operations of admittedly major significance. The operation must be surrounded by all the safeguards that a hospital can afford if bad results would be reduced to a minimum. Besides, American surgeons are in favor of doing all these operations under anesthesia. Local anesthesia, however, should be consistently removed from the list of available anesthetics for tonsil operations because there is no means of knowing the amount and the rapidity of absorption of the cocaine, and because of the danger of subsequent severe hemorrhage. Cocaine is a particularly treacherous drug, having caused many fatalities, and without any warnings of danger. Neither is chloroform favored as a general anesthetic in these operations, also because it is very treacherous in its action, and there does not seem to be sufficient justification for subjecting a patient to this special danger for an operation not of vital necessity. It seems that the ideal anesthetic for tonsil operations is ether, preceded by nitrous oxid.

The mere cutting off of the redundant tissue from the tonsil—tonsillotomy—is no longer in favor. It is considered very poor surgery. Recurrences are usual. This procedure merely exposes a large surface to infection, and for a time at least, until healing, causes an increase of the very conditions that the operation is intended to obviate. If this operation is decided upon as necessary, then the only procedure of choice is complete removal, enucleation—tonsillectomy. The gland should be dissected out, preferably with a blunt instrument, and hemorrhage controlled as in any surgical operation. Styptic drugs or like measures are neither necessary nor advisable. Carried out from this standpoint, tonsil operations need cause little fear of untoward results.

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SCHOOL INSPECTION AND SANITATION IN EXTRA-CANTONMENT ZONES.

The Public Health Report of the United States Public Health Service for the week of March 8, contains some very interesting information regarding school inspection and sanitation in extra-cantonment zones. Medical inspection of school children is one of the activities undertaken by the Service to prevent the carrying of communicable diseases to the troops. Such inspection has already been commenced in practically all of the zones surrounding the Army cantonments.

An officer of the Service is detailed to give his full time to the work, and has an office and the assistance of school nurses or other help. The expenses, as a rule, are met jointly by the Red Cross, the local health authorities, and the Public Health Service. The plan is for the Service officer and nurse, through coöperation with the teachers, to keep a close watch on each school for the early detection of contagious diseases. The parents are then notified, the quarantine rules are enforced, vaccination is practised where it fits the case, and all possible is done to prevent the disease from reaching the cantonment. The protection of the troops is the great aim, but at the same time the other benefits to be derived from school inspection are not to be overlooked. In all communities where school inspection has been adequately carried out, the result has been a remarkable reduction in the incidence of contagious diseases in the general population. Children are to be examined, not only for contagious diseases, but at least once a year for physical defects. These defects tend to lower individual resistance and increase the susceptibility of a child to contagious disease. They also retard intellectual development and prepare the way for degenerative diseases in later life. When these defects are found, the parents are informed and urged to have them corrected. Clinics are established wherever possible, in order to give the necessary operative treatment to needy children.

The United States Public Health Service has, as a part of its war duties, taken charge of the sanitation of many of the extra-cantonment zones. That district of Virginia between the York and James Rivers is of especial importance, as there will be gathered for training and embarkation the pick of all branches of the Army. Langley Field and Morrison Aviation Field, as well as Fort Monroe with the Artillery School, are in this district. Two large embarkation camps—Camp Stuart and Camp Hill—will contain a military population already trained, whose health is of vital importance to the country. In addition, the Newport News Shipbuilding and Drydock Company employs over 10,000 workmen engaged largely in government work. In this space—about 100 square miles—the population has increased more than 50% since the outbreak of the war. Local health authorities were utterly inadequate to care for so many people, so the work was given over to the Service, which coöperated with established organizations and increased all departments to war-time needs. The Red Cross furnished much assistance, creating a sanitary unit with an appropriation of $21,000. These funds made it possible to undertake measures against malaria-bearing mosquitoes, involving an expenditure of several thousand dollars, which could not reasonably have been obtained from the Federal Government, and have supplied promptly public health nurses, sanitary inspectors, and have made it possible to extend the work into the country by furnishing automobiles.

The work in this district covered communicable diseases and malaria, the proper disposal of excreta, the safeguarding of the supply of milk and water, and the inspection of schools. The sanitary control of establishments selling food and drink was undertaken in connection with the Army. The matters of garbage disposal, abatement of nuisances, the inspection of stores, and the like were left entirely with the local health authorities.

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THE RECLAMATION OF THE DISABLED.

It is no longer considered sufficient for the civil or the military surgeon to treat injuries solely with the view of rapid healing—what was previously called a good surgical result. Unless the injured member is put in position by the surgeon for the greatest degree of usefulness after healing, the surgery has been a failure. The progressive surgeon must have an eye not only to healing, but he must plan and fashion his operation in keeping with subsequent possibilities for usefulness of an injured member. From the standpoint of the military surgeon, the question is even a broader one. Not only the rehabilitation of an injured member but the reclamation of the injured person must be the aim of the surgeon, his co-workers and the public. This point is well understood in Europe, and the surgeon is even interested in the possibilities of training the disabled in new and useful occupations. His operative plans are much modified by the results being obtained with mechanical appliances and the subsequent training. English surgeons have devoted much time and thought to the construction of mechanical appliances and in coöperation in the training of the disabled soldier. However, in training the disabled individual for new occupations the conditions in the labor market of a particular occupation must be borne in mind, else there will be overcrowding in occupations where the disabled workers would have difficulty to hold their own in competition. It is this very possibility of overcrowding and competition which the disabled individual can little afford to stand that makes it necessary to train the disabled along special and perhaps even undeveloped occupational lines. The disabled soldier must not be allowed to depend for his future occupation upon the bounty of a public that makes room for him, but he must be made a skilled worker and able to command his place in the industrial or professional fields. It is said that Nature compensates an individual for the loss of a member or a faculty by enlarging others of the remaining ones. However that may be, this compensation may be explained by saying that the disabled individual's greater need of close application to work, his exclusion from other fields of activity, and even amusement, leaves him not only with more will to specialize, but also with more opportunity, for he is distracted by fewer extrinsic demands than the normal person. Much of this specialization in occupation has been carried out with the blind and with the deaf mute very successfully, and there is little reason why it cannot be applied elsewhere, but particularly in the case of the disabled soldier. Inquiry into the natural aptitude of the remaining individual members, senses or faculties can now be carried out by appropriate psychological apparatus. When determined, the part of the organism that is found to have the most psychologic aptitude is further trained and then harnessed to some suitable and useful occupation. Without this sort of inquiry, the overcrowding of some industrial fields will work harm to the community, and many evidences of natural ability will be overlooked. This opportunity to train special workers from among the individuals who would otherwise be a burden to themselves and to society, may yet prove to be one of the good things arising from evil, besides solving a very serious problem—what to do with the great army of disabled soldiers, and what the best methods of reclamation are.

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ATTENDANCE AT MEDICAL MEETINGS.

It has been a cause for chagrin to the officers of Suffolk District Medical Society that the series of war talks given in connection with the Boston Medical Library have been so poorly attended. One would think that the timeliness of the subjects and the character of the speakers would draw more hearers, in spite of the extra demands for doctors' services made by the community.

In February, Colonel Dercle, representative of the French Medical Service in this country, and Major Archibald, a Canadian surgeon who had seen much service at the front, gave excellent addresses. The audience, though small, made up in enthusiasm what it lacked in numbers. On March 20. Dr. James Alexander Miller of the Rockefeller Commission which was sent to France to study the problem of tuberculosis among the civil population, presented a marvellously sympathetic and instructive picture of social conditions in France. It was a liberal education to be given such a point of view of the great war as was presented to his hearers. Yet the audience, scattered strategically throughout the hall, filled a scant half of the room.

A small audience suggests discourtesy to these and other speakers, many of whom travel long distances to talk to us, and will in time make it difficult for the officers of the Society to secure good men.

The society will be given an opportunity to show its interest in problems of public health on April 24, when Dr. Eugene Kelley, the newly appointed State Commissioner of Health, will present the State's plan for fighting venereal disease. The tremendous importance of this subject and the opportunity which will be presented for the Society to demonstrate its interest in the achievements of the Department of Health should combine to secure a good attendance. Let the medical profession of Boston prove that it is interested in questions of wider range as well as in those merely of therapeutics or of surgical technic.

The meeting will be open to the medical public.

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MEDICAL NOTES.

Annual Report of the Jordan Memorial Sanatorium.—The fifth annual report of the Jordan Memorial Sanatorium for Tuberculosis, River Glade, New Brunswick, was presented in October, 1917. It has been decided during the past year to care for returned tuberculous soldiers from the province of New Brunswick at the Sanatorium. The institution is in splendid running order, has a most efficient staff and aims to teach its patients not only how to get well, but how to remain well. It has established clinics in several of the large cities of New Brunswick, where advice is given to those with tuberculosis symptoms. A goodly number of the patients who come to these clinics are children. It is essential to get at the children and to start them on the right road before it is too late, for they are the citizens of the future. In order to maintain a strong and healthy community the children must be prevented from becoming infected, and taught how to conduct themselves in order to remain well and healthy. Results of treatment of tuberculosis at the institution for the past year have been good. Fifty per cent. of those discharged were discharged either apparently arrested or apparently quiescent. The average length of stay of these cases was longer, the average gains in weight greater, the number of those who gained in weight larger, than that of the previous year.

It is expected that before summer the Sanatorium will have a ward ready for the care of returned tuberculous soldiers of the Province. Beds are being prepared for fifty-six such patients.

B. S. in Public Health.—A two-year course in public health, leading to the degree of bachelor of science in public health, is being offered by Simmons College. The programme is designed to give, in two years, the technical training required in a modern public health laboratory. It may be substituted for the third and fourth years of the regular household economics and general science courses, or it may be taken independently by students from other colleges who have satisfactorily completed two full years in an approved college, with one year of work in physics and biology, and approved courses in general and organic chemistry. The course is planned to satisfy the demand for administrative and technical workers, as illustrated by a letter written by Dr. Richard M. Pearce, chairman of the division of medicine and related sciences of the Council of National Defense, saying that there was a great need for trained technicians to work under military control.

WAR NOTES.

Army Deaths Increase.—Report from Washington, on March 29, states that although health conditions in general among the troops training in this country are described in this week's report of the division of Field Sanitation as "very good," deaths among the soldiers increased from 180 the week before to 223. Pneumonia increased in the National Army and Regulars, but in the National Guard all epidemic diseases are declining.

"Deaths in the Regular Army last week were 86 as against 71 the week before; in the National Guard 20 as against 28; and in the National Army 117 as against 81. Seventy-three of the deaths in the National Army, and seven of those in the National Guard, were caused by pneumonia.

Only 76 new cases of pneumonia were reported from the National Guard camps, but in the National Army camp 287 new cases of this disease were reported as against 255 the week before. Mumps and influenza prevail in many National Army camps, and some measles and meningitis are reported.

In the National Guard camps the sick and death rates are described as remarkably low, while in the Regulars there are fewer cases of measles, scarlet fever and meningitis. Pneumonia shows an increase among the Regulars, particularly in the aviation section and the Southern Department."

Army Deaths Number 237.—The War Department announces that the health of the army in the United States continued good for the week of April 4, although bronchitis and influenza, complicated with pneumonia, in many northern camps, increased the noneffective and death rates slightly over the preceding week. The total number of deaths reported was 237, of which 90 were among the regulars, 29 in the National Guard, and 118 in the National Army.

Medical Units of Women to be Sent to France.—Medical units composed of women will be sent immediately to that portion of France devastated by the present German drive—according to a statement issued by the American Women's Hospitals, which is conducting a campaign to raise $200,000 for the equipment and staff of a chain of hospitals. New York alone has already subscribed $23,258 toward this amount.

British Birth Rate Exceeded Death Rate in 1916.—Notwithstanding the war's carnage the number of births in 1916 exceeded by 277,303 the number of deaths, according to the Registrar General's report just made public. The reduction in the number of births amounted to only 12%. There was an unprecedentedly low marriage rate in 1916 as compared with an abnormally high one in 1915, the decrease being attributed to the fact that compulsion for military service was applied to married men in 1916.

Commissions for New England Medical Men.—It was announced from the Surgeon General's office on March 28 that the following New England men have accepted commissions in the army medical corps:

Major—Gray, George H., Lynn, Mass.

Captains—Ferguson, J. B., Providence, R. I.; Hathaway, J. G., New Bedford, Mass; Hopkins, B. H., Ayer, Mass; Torbert, J. R., Boston, Mass.

First Lieutenants—Budington, H. F., Springfield, Mass; La Liberté, E. J., Fall River, Mass; Morris, F. M., Fall River, Mass; Lucas, J. D., Boston, Mass.; McIntire, W. A., Worcester, Mass.; Whalen, E J., Hartford, Conn.; Sawyer, Edward J., Gardner, Mass.

Award of the Distinguished Service Cross.—Report from Army Headquarters in France states that the distinguished service cross has been awarded to Lieutenant J. P. Rosenwald of the medical corps attached to the artillery. Lieutenant Rosenwald, while attached to an artillery regiment, "twice entered a battery position under heavy fire in order properly to care for wounded."

Commissions in the Medical Corps.—Surgeon General Gorgas announces that the following New England men have been granted commissions in the army medical corps:

John Woods Harvey, first lieutenant, Boston; John A Hayward, first lieutenant, Portland, Me.; Perez B. Howard, captain, Newtonville, and Henry T. Hutchins, major, Boston.

Venereal Diseases in the German Army.—Vogel of Breslau has found that though the total incidence of venereal disease in the German army was comparatively low (about 0.3%), syphilis, as compared with gonorrhea, had become more common. The incidence ratio of syphilis to gonorrhea, which was as 1 to 3 or 4, had risen to 1 or 2. Another disquieting fact was the high proportion of married men—a third of the total—among infected soldiers.

Use of Salvarsan in Germany.—The Reichstag debate, in which the patrons of salvarsan were accused of suppressing salvarsan fatalities, and in which the medical journals were said to be accomplices to the unscrupulous exploitation of this drug, has had a sequel. In an order from the Prussian Minister of the Interior, dermatologists, specialists in venereal diseases, and the heads of medical institutions are required to give a return showing the number of patients treated and of injections given, and the nature and number of the ill effects observed. Information is asked as to the benefits resulting from the treatment of syphilis with salvarsan and its derivatives.

BOSTON AND MASSACHUSETTS.

School of Instruction for Health Officials.—At the recent meeting of the Public Health Committee of the Massachusetts Medical

Society, Mr. C. E. Turner, an instructor in the Department of Biology and Public Health of the Massachusetts Institute of Technology, was appointed as their field agent. This position was formerly held by Mr. Edward A. Ingham, now District Health Officer in the State of California.

It is the plan of the Public Health Committee to hold its second Convocation and School of Instruction for Health Officials during the last week in May. This school will be held with the coöperation of the State Department of Health, the Massachusetts Association of Boards of Health and the United States Public Health Service. A comprehensive program is being prepared which will deal with a variety of public health activities, laying special emphasis upon the several movements which are occupying the attention of military and civilian health authorities.

Holden (Mass.) Hospital.—The Holden Hospital, Inc., has leased the plant of the Holden Cottage Hospital. The latter has, for the last three and a half years, been conducted as a private institution. The work began under the new management on April 1st.

When the Holden townspeople learned that, because of increasing expense, it would become necessary to discontinue the hospital work, a mass meeting was called, much enthusiasm was manifested and a fund started to equip a hospital within the town.

Because of the present unfavorable building conditions it was decided to take over the plant of the Cottage Hospital for the present. The Board of Directors consists of: William J. Jamieson, Pres.; William H. Warren, Treas.; Harry A. Creamer, Sec.; Rev. James Prendergast; Jefferson W. Coe; Dr. Walter H. Welch; Bertram S. Newell, William Swenson; Rev. George E. Cary; and Rev. James W. Leonard.

Carney Hospital Alumni Election.—The annual meeting and dinner of the Carney Hospital Alumni Association were held at the Hotel Bellevue recently with more than fifty members present. Dr. D. J. Harrington, retiring president, was toastmaster. The principal speakers were Dr. John T. Bottomley and Dr. D. F. Mahoney of the hospital visiting staff, who discussed medical conditions brought about by the present war. The Rev. P. J. Lyons, chaplain of the hospital, referred to the great assistance given to the hospital by the members of the association and to the number of graduates of the hospital who are now serving in the army and navy.

Dr. P. J. Jakmauh was elected president; Dr. L. E. Phaneuf, vice-president, and Dr. F. G. Minter, secretary-treasurer for the ensuing year.

Obituaries.

AUGUSTUS CHAPMAN WALKER, M.D.

Augustus Chapman Walker, M.D., died at his home in Cambridge, April 5, 1918, aged 84 years. He was born in Barnstead, N. H., on June 9, 1833, the son of Joseph Alcott and Abigail (Murray) Walker. He received his A.M. degree from Dartmouth in 1862 and that of M.D. from the Harvard Medical School in 1866. In September, 1862, Dr. Walker enlisted as an assistant surgeon with the 133d New York Regiment of Volunteer Infantry. He served in that capacity till 1864, when he was transferred to the 18th New York Regiment of Volunteer Cavalry, later serving as surgeon-in-chief of the Cavalry Division stationed at New Orleans, La. He was honorably discharged in June, 1866. He then began the practice of his profession in Greenfield, where he continued for nearly two-score years as an active practitioner.

In his professional career, Dr. Walker had been pension surgeon for the United States Pension Board and he had served as a member of the Massachusetts Board of Registration in Medicine. He was a member of the Franklin District Medical Society, a Fellow of The Massachusetts Medical Society, belonged to the Massachusetts Commandery of the Loyal Legion, the G.A.R., the Masonic fraternity and other organizations.

He married, at Lyme, N. H., on Sept. 11, 1862, Maria Churchill Grant. They removed, after their long residence in Greenfield, to Cambridge, about 10 years ago. Mrs. Walker, who had been prominent as a member of the Daughters of the American Revolution, died last August. Dr. Walker is survived by two sons, Robert T. Walker, of Cambridge, and Sidney G. Walker of Providence, R. I.

IRVINE A. WATSON, M.D.

Irvine A. Watson, M.D., secretary and executive officer of the New Hampshire State Board of Health since its organization in 1881, died recently in Concord, N. H. Dr. Watson was formerly secretary of the American Public Health Association. He was president of the International Conference of State and Provincial Boards of Health in 1903, and was an honorary member of many American and foreign scientific bodies.

Dr. Watson was born in Salisbury, N.H., on Sept. 6, 1849, the son of Porter B. Watson and Luvia E. (Ladd) Watson. His education was received in common schools and at the seminary in Newbury, Vt., and the Collegiate Institute. He studied medicine and attended lectures at the medical schools of Dartmouth College and of the University of Vermont. He began practice, in 1871, in Groveton, N. H., and went to Concord to reside in 1881. He was for some years superintendent of schools in Groveton and had served in the New Hampshire House of Representatives. Other public service had been as secretary of the New Hampshire Commission of Lunacy, as Registrar of Vital Statistics of New Hampshire, and as president of the State Board of Cattle Commissioners. He compiled and edited various reports on medical and sanitary subjects and societies and their work. In 1872 Dr. Watson married Lena A. Farr of Littleton, N. H.

Miscellany.

THE BACTERIOLOGY OF POLIOMYELITIS.

The work of Dr. Horace Greeley on the bacteriology of poliomyelitis, of which preliminary announcements were published in the *Medical Record* of January 13, the Boston Medical and Surgical Journal of April 12, 1917, and complete details in the *Journal of Laboratory and Clinical Medicine,* July, 1917, has recently been completely corroborated by Dr. E. C. Rosenow[1] and Dr. L. D. Bristol.[2]

It will be remembered that Dr. Greeley grew from the nerve centers of cases succumbing to the 1916 epidemic a pleomorphic bipolar bacillus which he caused to grow as the globoid bodies described by Flexner and Noguchi, and also in the form of the streptococcus described by Rosenow.

Working with cultures obtained from the latter, he developed from Rosenow's "streptococcus" the pleomorphic bacillus. This bacillus, besides being susceptible of modification of form between the globoid bodies, through streptococcus or diplococcus forms to bipolar bacilli, he found also subject to change from Gram-positive to Gram-negative. The fully developed bacillus was found to be motile, with a single terminal flagellum, would liquefy solidified serum, produce an acid reaction in neutral bouillon and develop spores. Five out of six strains isolated by Dr. Greeley failed to produce gas in sugar media; three out of the six produced a slight amount of indol. He found that the organism would pass the Berkefeld filter and would grow at all temperatures between summer heat (70° F.) and that of the body.

Dr. Greeley's cultures grew readily in market milk, and in it resisted the pasteurization process.

Experimenting on animals, he produced paralysis with nerve center lesions, in dogs, cats, rabbits, and guinea-pigs, and also typical attacks of distemper in young dogs and cats. A culture accidentally dropped in the experimenter's eye produced an abortive case of the malady, and mucus from his throat produced paralysis in a rabbit and a contagious fatal disease with nerve center hemorrhagic manifestations among guinea-pigs.

Dr. Greeley tested the organisms isolated with blood serum from fifty convalescents of the 1916 epidemic and found that, while agglutination was ordinarily not produced in high dilution, a specific relation was evident. In animals (cats) he produced antipoliomyelitis sera that agglutinated in high dilution the cultures used to produce them, but varied considerably in agglutination of other cultures (strains).

Using this specific serum and sera from human poliomyelitis convalescents, he showed that a distinct relationship existed between the poliomyelitis bacilli and a bacillus isolated from a case of distemper in a dog.

Dr. Rosenow now states that he finds that his "streptococcus" will produce the bacillus form, and Dr. Bristol, working with one of Flexner's cultures, obtained from the Rockefeller Institute, developed from the globoid bodies bacilli such as Dr. Greeley described. Dr. Bristol concludes:

> ''From these studies I venture to suggest the possibility that the organism of poliomyelitis is a pleomorphic bacillus (often indistinguisable, however, from a true coccus) and that it may be closely related to the large group of so-called bipolar bacilli, or Pasteurella.'' ....
> ''*Based on this assumption, the mode of spread may be* considered analogous to that demonstrated for all forms of Pasteurellosis in animals, namely: (1) directly, by contact with the secretions or excretions of an infected individual (ether diseased or a healthy 'carrier'); (2) indirectly, by the carriage of the specific organisms by insects, or possibly in dust, uncooked food, or drink.''

This is practically the same conclusion announced by Dr. Greeley some six months previously:

> ''It is demonstrated that the organism isolated from the nerve centers of cases of poliomyelitis (including the 'streptococcus' described by various observers) is a pleomorphic bacillus of the distemper group, which varies in characteristics much as the various, supposedly different, members of the group do from one another; that this poliomyelitis bacillus could cause paralysis in cats, dogs, rabbits and guinea-pigs, and that an accidental passage of a culture through man gave rise to abortive symptoms of the malady; that after this last-named passage it could produce paralysis in a rabbit and a contagious infection of guinea- pigs, with nerve centre lesions; and, finally, that from the guinea-pigs it could produce distemper in cats.
>
> ''Further, it is shown that the organism is saprophytic and grows well in milk at 'summer heat;' and that it resists the pasteurization process, while contained therein. Also, that it forms 'spores' and is a 'filter passer.'
>
> ''It seems very probable that, while contact cases of poliomyelitis may occur, either by direct transmission of the germ from animal to man, or from man to man, the great mass of cases which comprise epidemics are caused by milk-borne contagion and, furthermore, we shall have to regard our cows as possible 'carriers' of the infection. It is, of course, evident that infection could get into milk from other animals, as the cat and dog, or even from a human carrier.''

REFERENCES.

[1] American Journal of Public Health, December, 1917
[2] Journal of Mental Research, January, 1918.

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ARMY MEDICAL CORPS EXAMINATIONS.

The Surgeon-General of the Army announces that preliminary examinations for the appointment of first lieutenants in the Medical Corps, U. S. Army, are being held at numerous points throughout the United States, on the first Monday of each month.

Full information concerning the examination may be procured upon application to the "Surgeon-General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation to report for examination are that the applicant shall be a citizen of the United States, between 22 and 32 years of age, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, of good moral character and habits, and shall have had at least one year's post-graduate hospital interneship.

The Government cannot pay to applicants any portion of their expenses incurred in connection with their examination, and due consideration, therefore, will be given to localities from which applications are received, in order to lessen such expenses as much as possible.

Chemistry and Physics have been eliminated as subjects of the examination.

Those applicants who successfully pass the examination are commissioned first lieutenants in the Medical Reserve Corps, and sent to either the Army Medical School in Washington, or to a training camp for a course of instruction, covering a period of approximately three months, during which time they draw the pay and allowances of their grade. If, at the close of their instruction, they pass the final examination, and are favorably recommended, they are commissioned first lieutenants in the Medical Corps of the Regular Army.

The Medical Corps consists of commissioned officers in number approximately equal to seven for every one thousand of the total enlisted strength of the Regular Army authorized from time to time by law, proportionally distributed among the graded and in the ratios as follows: Colonels, 3.16%, lieutenant-colonels, 5.42%; majors, 23.7%; captains and first lieutenants, 67.72%.

Promotion to the grades of major, lieutenant-colonel, and colonel is by seniority, subject to examination.

The Surgeon-General, who, under the permanent law, has the rank of brigadier-general and is the chief of the Medical Department, is selected from among the officers of the Medical Corps not below the grade of lieutenant-colonel.

PAY AND EMOLUMENTS.

To each rank is attached a fixed annual salary, which is received in monthly payments, and this is increased by 10% for each period of 5 years' service until a maximum of 40% is reached. A first lieutenant receives $2000 per annum, or $166.66 monthly. At the end of five years (*during the period of the war, at the end of one year*) he is promoted to captain, subject to examination, and receives $2400 a year, with an increase of 10% after five years' service, making $2640, or $220 per month. After 10 years' service the pay would be $2880 annually, or $240 per month. The pay attached to the rank of major is $3000 a year, which, with 10% added for each five years' service, becomes $3600 after 10 years' service, $3900 after 15 years' service, and $4000 after 20 years. The maximum monthly pay of lieutenant-colonel, colonel, and brigadier-general is $375, $416.66, and $500, respectively. Officers, in addition to their pay proper, are furnished with allowance of quarters according to rank, either in kind, or, where no suitable Government building is available, by commutation; fuel and light therefore are also provided. When traveling on duty an officer receives mileage for the distance traveled, including the travel performed in joining first station after appointment as first lieutenant. On change of station he is entitled to transportation for professional books and papers and a reasonable amount of baggage at Government expense. Groceries and other articles may be purchased from the commissary at about wholesale cost price. Instruments and appliances are furnished for the use of medical officers in the performance of their duties. Well-selected professional libraries are supplied to each hospital, and standard modern publications on medical and surgical subjects, including medical journals, are added from time to time. At each military post there is also a laboratory, and medical officers are encouraged to carry on any special line of professional study which appeals to them and which fits them for their duties as medical officers.

Officers of the Medical Corps are entitled to the privilege of retirement after 40 years' service, or at any time for disability incurred in the line of duty. On attaining the age of 64, they are placed on the retired list by operation of law. Retired officers receive three-fourths of the pay of their grade (salary and increase) at the time of retirement.

At the present time there are approximately seven hundred vacancies in the Medical Corps.

United States Civil Service Examination.—Pathologic physiologist (male). May 7, 1918.

The United States Civil Service Commission announces an open competitive examination for pathologic physiologist, for men only. A vacancy in the Hygienic Laboratory, Public Health Service, Washington, D. C., at $3000 a year, and future vacancies requiring similar qualifications at this or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

The duties of the appointee will be to study the pathology of industrial poisoning, with special reference to the manufacture of munitions.

Competitors will not be required to report for examination at any place, but will be rated on the following subjects, which will have the relative weights indicated, on a scale of 100: (1) Education, 30; (2) Experience, 40; (3) Publications (to be submitted with application), 30.

Under the first and second subjects competitors will be rated upon the sworn statements in their applications, and upon corroborative evidence adduced by the Commission.

A degree of M.D., from an institution of recognized standing, and at least two years' postgraduate experience in pathologic physiology, are prerequisites for consideration for this position.

Applicants will be admitted to this examination regardless of their residence and domicile, but those desiring permanent appointment to the apportioned service in Washington, D. C., must have been actually domiciled in the State or Territory in which they reside for at least one year previous to the date of the examination, and must have the county officer's certificate in the application form executed. Positions in the Hygienic Laboratory of the Public Health Service are in the non-apportioned service.

Applicants must have reached their twenty-first birthday on the date of the examination.

Applicants must submit with their applications their photographs, taken within two years. Tintypes or proofs will not be accepted.

This examination is open to all male citizens of the United States who meet the requirements.

Applicants should at once apply for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D.C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Honolulu, Hawaii; Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Cal.; Old Customhouse, St. Louis, Mo.; Administration Building Balboa Heights, Canal Zone; or the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

Applications should be properly executed, excluding the medical certificate, and must be filled with the Civil Service Commission, Washington, D.C., with the material required, prior to the hour of closing business on May 7, 1918.

United States Civil Service Examinations.—Stenographers and typewriters wanted, men and women.

The United States Government is in urgent need of thousands of typewriter operators and stenographers and typewriters. All who pass examinations for the departments and offices at Washington, D.C., are assured of certification for appointment. It is the manifest duty of citizens with this special knowledge to use it at this time where it will be of most value to the Government. Women especially are urged to undertake this office work. Those who have not the required training are encouraged to undergo instruction at once.

Examinations for the Departmental Service, for both men and women, are held every Tuesday, in 450 of the principal cities of the United States, and applications may be filed with the Commission at Washington, D. C., at any time.

The entrance salary ranges from $1000 to $1200 a year. Advancement of capable employees to higher salaries is reasonably rapid.

Applicants must have reached their eighteenth birthday on the date of the examination.

For full information in regard to the scope and character of the examination and for application blanks, address the U. S. Civil Service Commission, Washington, D. C., or the Secretary of the U. S. Civil Service Board of Examiners at Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Atlanta, Ga.; Cincinnati, Ohio; Chicago, Ill.; St. Paul, Minn.; St. Louis, Mo.; New Orleans, La.; Seattle, Wash.; San Francisco, Cal.; Honolulu, Hawaii; or San Juan, Porto Rico.

John A. McIlhenny,
President, U. S. Civil Service Commission,
Washington, D. C.

Correspondence.

REGULATION OF THE PRACTICE OF MEDICINE.

Commonwealth of Massachusetts.
Board of Registration in Medicine,
Room 501, No. 1, Beacon Street,
Boston, March 28, 1918.

Mr. Editor:

Since physicians as a class seem to take but little interest in laws regulating the practice of medicine, or in efforts made to enforce these laws, it seems desirable to call attention to the provisions of Chapter 55 and of Chapter 218 of the General Acts of the year 1917, with the hope of securing the coöperation of the profession.

Under the provisions of these Acts, the Board of Registration in Medicine may revoke or suspend certificates of registration, as shown in the following excerpts:

"Said Board, after hearing, may by unanimous vote revoke any certificate issued by it and cancel the registration of any physician who has been convicted of a felony or of any crime in the practice of his profession; or after hearing may by unanimous vote revoke any certificate issued by it and cancel the registration of any physician, for a period of not exceeding one year, who has been shown at such hearing to have been guilty of gross and confirmed use of alcohol in any of its forms while engaged in the practice of his profession, or of the use of narcotic drugs in any way other than for therapeutic purposes; or to have published, or caused to be published, or to have distributed, or caused to be distributed, any literature contrary to the provisions of chapter three hundred and eighty-six of the acts of the year nineteen hundred and eight; or to have acted as principal or assistant in carrying on the practice of medicine by an unregistered person, or by any person who has been convicted of the illegal practice of medicine, or by any registered physician whose license has been revoked either permanently or temporarily, or to have aided or abetted in any attempt to secure registration, either for himself or for another by fraud, or in connection with his practice, to have defrauded or attempted to defraud any person.

"The boards of registration in medicine, dentistry, pharmacy and veterinary medicine, after a hearing, may, by a majority vote of the whole board, suspend, revoke or cancel any certificate, registration, license or authority issued by the board, if it appears to the board that the holder of such certificate, registration, license or authority, is insane, or is guilty of deceit, malpractice, gross misconduct in the practice of his profession, or of any offense against the laws of the commonwealth relating thereto. Any person whose certificate, registration, license or authority is suspended or revoked hereunder shall also be liable to such other punishment as may be provided by law. The different boards may make such rules and regulations as they deem proper for the filing of charges and the conduct of hearings."

Under these provisions of law, the Board has revoked, or suspended, the registration of physicians, for performing abortions, gross and confirmed use of alcohol, the illegal prescribing of narcotic drugs, the publishing of improper literature, for acting as an associate to an unregistered practitioner, and for deceit and misconduct in the practice of the profession.

The Board finds that a considerable number of physicians are covering the work of midwives by signing birth returns without having been in attendance. Evidence is accumulating which will result in the calling of such practitioners before this Board, and if the complaints against them are verified, all such men stand in danger of losing their right to practise.

The passage of these Acts last year, as referred to above, has improved conditions in medical practice in this state to a considerable extent, and several irregulars have ceased practice because of the impossibility of having legally registered practitioners to cover them.

Aside from midwives, unregistered impostors are doing very little work in this State now, and when the medical profession will provide for the adequate care of obstetric cases within the means of those people who now employ midwives, the situation can be very much improved.

All acts of illegal practice coming under the observation of physicians should be reported to the local prosecuting officials, but if any one feels that he may not properly do this, the Board will see that the facts are reported to the police departments without involving private individuals.

But the menace of the incompetent practitioner still exists, for a strong effort was made this year to have the Legislature enact into law a bill which would have permitted a man who has failed to secure registration, to have engaged in practice. This man formerly conducted a very lucrative medical practice. The petition for this bill was signed by a former governor of this Commonwealth, but the Committee on Public Health reported adversely, and the measure failed to secure sufficient support.

There is another matter of considerable importance which should interest the profession.

For several years complaints have been made that a certain medical college in this State has not been conducting its work in conformity with its published announcements; that students have been coerced into paying fees which could not be properly charged; that many of its graduates do not show evidence of having been properly taught; that the Council on Education of the American Medical Association does not recognize this school; and that thirty-nine States of the Union will not even admit the graduates of this school to make applications for licensure.

These assertions and facts led the Attorney-General to recommend to the Legislature that the charter of this school be revoked, and the Assistant District Attorney of Suffolk County appeared at a legislative hearing and argued in support of the recommendation of the Attorney-General. But medical men of standing appear to take little interest in influencing legislation to prevent this questionable school from doing business. As it now stands, Massachusetts is legally endorsing an institution which is discredited by thirty-nine other States, and by the official Committee of the American Medical Association, and permits it to continue to induce young people to waste time and money for a comparatively worthless education and a degree which is of very little value.

It is generally felt that the medical profession is responsible for the maintenance of preventive medicine. One may question whether it can justly ignore the responsibility of trying to maintain reputable standards of medical education.

The greatest efficiency in all public health measures and preventive medicine must come from high-grade medical education, for the well-trained doctor in private practice is often the indispensable factor in promoting the methods of authorities, and it has sometimes been found that the low-grade medical men are obstacles in the path of progress.

Improvement in conditions relating to medicine would take place more rapidly if the profession would exert its full influence upon our law-makers.

Walter P. Bowers,
Secretary Board of Registration in Medicine.

A CHILDREN'S PAVILION AT THE SHARON SANATORIUM.

April 4, 1918.

Mr. Editor:

May I through the medium of your columns bring to the attention of the medical profession and others the proposed opening of the new "Children's Pavilion,"—the most recent and much-needed addition to the Sharon Sanatorium at Sharon, Mass., now in the twenty-seventh year of its existence? The pavilion is intended to be a combined sanatorium and school for debilitated children with suspected tuberculosis, and for those who are in the earliest stages of pulmonary or glandular tuberculosis, and not for surgical cases.

The class of patients to be received will be children of people of refinement, with moderate incomes; neither the very poor nor the rich. With the recognized tendency of latent tuberculosis in children to become active in later life, the Directors of the Sanatorium now wish to increase its usefulness by receiving this type of patient, as a means of prevention as well as cure. For twenty-seven years it has been the means of bringing back health to hundreds of women of limited means afflicted with tuberculosis. It now enlarges its scope of work by this recent addition for children, and thus will help to meet a great need in our community.

The moderate price of ten dollars a week, exclusive of laundry, will be charged. It will be easily understood that the price of board is quite inadequate to meet the annual deficit, as has been the case in the past. Generous public help, therefore, is still urgently solicited, especially in these trying times, when home charities have to suffer a loss of income on account of the war.

The formal opening of the Pavilion will take place early in June, the exact date to be announced later. Anyone who desires to see the Sanatorium now will be cordially received at Sharon by the Superintendent, Dr. Walter A. Griffin. Applications for admission to the Pavilion should be addressed to him or to the medical members of the corporation: Dr. Henry I. Bowditch, 86 Bay State Road, or myself at 506 Beacon Street, Boston.

Very truly yours,
Vincent Y. Bowditch.

TOXICITY OF ARSPHENAMINE AND NEO-ARSPHENAMINE.

Treasury Department,
United States Public Health Service.
Mr. Editor: Washington, April 5, 1918.

In view of the reports in current medical literature of untoward results from the use of arsphenamine and neo-arsphenamine, I have to request that you give publicity to the statement that it is requested that samples of any lots of these arsenicals which have shown undue toxicity be forwarded to the Hygienic Laboratory for examination.

In sending these samples it should be ascertained that the lot number is the same as that of the ampules used on patients. The samples sent should, if possible, be accompanied by a brief note stating the approximate body weight and age of the patient, the dose and dilution of the drug given, the symptoms and result, that is, whether fatal or not.

Respectfully, G. W. McCoy, *Director.*

MORE MEDICAL OFFICERS NEEDED IN THE ARMY AND NAVY.

Mr Editor:— Boston, April 15, 1918.

The following telegram has been received from Major Simpson of the Council of National Defense, Medical Section, at Washington. Physicians are urged to make application for service at the earliest possible moment, sending their applications to the Surgeon General of the Army or the Surgeon General of the Navy, Washington, D. C.

Washington, D.C.,
Dr. Walter L. Burrage, April 13, 1918.
282 Newbury St., Boston, Massachusetts.

> An urgent need exists for several thousand additional medical officers in the Army and Navy, some for immediate work, some for training, and others to be held in reserve. Please urge your State and County Committees to speed up enrollment as effectively as possible. F. F. Simpson,
> Major, Medical Reserve Corps.

Very truly yours,
J. B. Blake, *Chairman,*
W. L. Burrage, *Secretary,*
Massachusetts State Committee,
Council of National Defense,
Medical Section.

NOTICES.

The Cutter Lectures on Preventive Medicine and Hygiene.—By Frederic S. Lee, A.M., Ph.D., Professor of Physiology, College of Physicians and Surgeons, Columba University, New York, on "Industrial Efficiency and the War." Thursday, April 25, 1918, and Friday, April 26, 1918, at the Harvard Medical School Amphitheatre, Building E, 5 to 6 p.m.

These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine, and that they should be delivered in Boston, and be free to the medical profession and the press.

All members of the classes in the Medical School, the medical profession, the press, and others interested are cordially invited to attend.

Two Morphine Habitués.—The attention of physicians is called to the case of two morphine habitués who have been reported to the Journal as making a round of doctors' offices in the effort to obtain their drug.

The first is a young man of short stature and with a round, florid face. He has a ventral hernia and complains of abdominal pain. He does not ask for morphia but simulates extreme pain so well as to suggest the administration of morphia for his relief.

The second case is that of a well-dressed, middle-aged woman of ladylike manner. She has dark hair and is very pale and extremely nervous. In the reported instance she waited in a doctor's office until an opportunity occurred when every one was out of the room; then took some morphia from his bag, and left.

Other physicians in the city should be on the watch for these persons in order, if possible, to place them under suitable conditions for the treatment of their addiction.

SOCIETY NOTICES.

Middlesex South District Medical Society.—The annual meeting of the Society will be held at the American House, Boston, on Wednesday, April 17, 1918, at 11.00 a.m. The annual oration will be delivered at 12.00 o'clock, noon, by Dr. Frank L. Morse of Somerville. Subject: "The Control of Communicable Diseases." Lyman S. Hapgood, *Secretary.*

N. B. Members are reminded that, by vote of the Society, the annual dinner will be omitted this year. For the convenience of those coming from a distance or any who so desire, arrangements have been made so that an informal lunch may be obtained at the hotel after the oration.

Officers: President, George T. Tuttle, Waverley; Vice-President, Herman T. Baldwin, Chestnut Hill; Secretary, Lyman S. Hapgood, Cambridge; Treasurer, Frank W. Plummer, Malden; Commissioner of Trials, Lewis M. Palmer, Framingham; Orator, Frank L. Morse, Somerville; Censors, E. Stanley Abbot, Waverley, Supervisor; Frederick W. Rice, Brighton; Charles E. Hills, South Natick; Frank L. Morse, Somerville; Frederick J. Goodridge, Cambridge.

New England Physical Therapeutic Association.—The next regular meeting of the New England Physical Therapeutic Association will be held at the Hotel Brunswick, Boston, Mass., Tuesday, April 23, 1918, at 8 p.m.; dinner at 6 p.m. Dr. H. W. Marshall, of Boston, will read a paper on "Structural Deformities versus Functional Efficiencies as Objects of Treatments."

All members of the medical profession are cordially invited to this meeting.

Frank E. Stowell, M.D., *President;*
Frank B. Granger, M.D., *Treasurer;*
Frederick H. Morse, M.D., *Secretary.*

Suffolk District Medical Society.—The annual meeting will be held on Wednesday, April 24, 1918, at the Boston Medical Library, at 8.15 p.m.

Business meeting: Reports of officers and committees, election of officers, incidental business.

The paper of the evening will be by Dr. Eugene Kelley, State Commissioner of Health, on

"The State Venereal Disease Program."

Guests will be welcome at the second part of the meeting, which will begin at about 8.45 p.m.

Gilbert Smith, *Secretary.*

CENSORS' EXAMINATIONS.

The Censors of the Suffolk District Medical Society will meet to examine candidates for admission to The Massachusetts Medical Society, at 8 The Fenway, on Thursday, May 2, 1918, at 4 p.m.

Candidates, who must be residents of the Suffolk District or non-residents of Massachusetts, should make personal application to the Secretary and *present their medical diplomas*, at least one week before the examination.

For further particulars, apply from 2 to 5 p.m. to
Gilbert Smith, *Secretary.*
99 Commonwealth Avenue.

The Censors of the Worcester District Medical Society will meet for examination of candidates for fellowship, Thursday, May 2, 1918, at 4 p.m., in the Reference Department, Worcester Public Library. Candidates should make application to the undersigned a week before that date.

Ernest L. Hunt, *Secretary.*

The Boston Medical and Surgical Journal

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Original Articles.

WOUNDS OF THE JOINTS.

BY L. ELOESSER, M.D., SAN FRANCISCO.

[From the Division of Surgery, Medical Department, Stanford University.]

THE mass of material that has accumulated during the present war has served to change many of our notions as to the treatment of injuries to the joints.

The difficulties of treatment are largely mechanical and due to the complex anatomy. We speak of *a* joint cavity; more accurately, each joint is a series of cavities with more or less open communication—a series of cavities with many interdependent pouches and pockets. Even the main cavity of a joint is not an entirely free space; in hinged joints it is divided by the bones and the intra-articular ligaments into two or more or less independent front and rear parts. The cavities are lined by a single layer of flat cells, which secrete a slimy synovia and are differentiated from connective tissue by the demands of use. Under the synovial layer lies an intricate network of lymph spaces, which, however, seems to have no direct connection with the joint cavity. As long as the synovial endothelium is intact, one may fill the joint to bursting without injecting the periarticular lymph channels.

When injured, the synovial endothelia tend to revert to a primary form; they turn into granulation tissue, lose their specific character, and end as scar, as adhesions or fibrous bands. Years of experience have taught us to respect the endothelium of the belly, to depend upon its power of combating bacteria when uninjured, to try to preserve its specific nature, and not to cause it to degenerate by rubbing it with gauze or destroying it with chemicals. Our experience with joints has not been sufficiently general to make these principles as widely known in the treatment of infectious arthritides as they are in peritonitis.

Payr[1] has made a classification of the sources of joint infection that is of much practical value. He says that bacteria may reach the joint from four sources: (1) directly from without, being carried in by a bullet or entering through an open wound; (2) through a fissure in an infected bone or through a communicating bursa; (3)—in exceedingly rare instances—through the encroachment of an infectious process from the neighboring tissues; and finally (4) through the blood stream, as in the metastatic joints of pyemia.

It is important to keep apart each of these four sources of infection,—the direct, by means of a missile; the indirect, through a fissure in a bone; the secondary, by spread of a neighboring suppuration, and the metastatic. It is important, not only theoretically, but practically.

Each kind of infection has its rational mode of treatment. If the bacteria are carried in by a foreign body, obviously the thing to do is to get the offending invader out as soon as possible. If it is removed early, before the lining of the joint and the capsule have been irreparably damaged, recovery with complete restoration of function may be expected.

If the invasion has its source in an osteomyelitis which pours pus into the joint through an infected fissure in the bone, or if the pus arises in an infected bursa, it is useless to hope for improvement as long as the primary focus is active. If the original infection lies in a bursa, merely opening it may allow the joint to heal without attacking the main cavity at all. If, however, the pus comes from a fissure in the bone, if there is necrotic marrow, or sequestra that act like a foreign body and keep up a continually active bacterial focus, it is hopeless to strive to preserve the joint. The best we can do is to remove the dead bone, or if a manifestly infected joint fracture comes into our hands early, to forestall a certain sepsis by a thorough primary revision, removing loose fragments of bone and foreign bodies, and beginning antiseptic treatment before sepsis and deeper invasion of the tissues have begun.

The third source of infection,—from a neighboring focus of suppuration, is exceedingly rare. There are pus joints, it is true, where it seems as though a secondary indirect infection must have taken place; where a man shot through the thigh, three or four inches above the knee, for instance, develops a purulent joint. Careful scrutiny of the wound channel, however, will usually show that the connection is a direct one—will reveal a fragment of shell lodged in the suprapatellar bursa or some other communicating cavity. Opposite observations are certainly frequent and astonishing enough. One may see enormous streptococcic abscesses reaching from the ankle half way up the thigh, or have the leg rotten through and through with a gas phlegmon and yet see the knee uninvolved, with no exudate and with perfectly clean joint surfaces and synovia. Osteomyelitic foci in the epiphyses of the tibia may slowly reach the knee or ankle, pieces of disintegrating cartilage may even come out of a cavity in the end of the bone marrow and thus prove the involvement of the joint, and yet the suppuration may not spread further and the man may remain fever-free. Such joints are usually the seat of a subacute arthritis with much atrophy; the capsule is more or less swollen, boggy and contracted, and the joints remain stiff; they may finally ankylose completely, but active joint suppuration and sepsis scarcely occur. Active suppuration and sepsis scarcely occur *if* the joint is left alone. The greatest danger to the joint lies, not in the nearby focus, but in the hands of the surgeon who opens it under a mistaken diagnosis. If the men are seen early, and if one surgeon has them in hand from the beginning, it is usually not hard to say whether there is pus in the joint or not. But if, as in military practice, the wounded have passed through three or four hands, it may be impossible to say, when they come to you, whether the pus lies in the joint or outside. The only thing to do is to wait and see. One certainly runs much less risk of spoiling a joint that lies near a suppurating wound by waiting and watching it for three or four days, than by opening it too soon and finding nothing but the pus that one's own hands have wiped into it. One cannot emphasize too strongly the necessity for distinguishing between pus *in* a joint and pus *around* it. To open it unless the pus is *in* it is to ruin it forever.

The last form of infected joint is the metastatically infected one. If there is pus, incise and let it out; if in doubt, the aspirating needle will tell.

The four sources of infection and their treatment, then, are: (1) Direct infection from without; remove the offending material as soon as possible. (2) Indirect infection from communicating bursae or joint fractures; treat the primary focus, resect if necessary, resect prophylactically if manifestly infected. (3) Secondary indirect infection from neighboring abscesses—rare; leave the joint alone unless sure it is involved. (4) Metastatic infection; evacuate the pus.

All of these infections, whatever their origin, may at one time or another lead to similar pathological and clinical lesions. Of these, there are two distinct groups,—distinct in their course, in their severity, and in their after-effects. The first is the suppurative form, without deep involvement of the joint capsule; the second is the drier form, the capsule phlegmon. It is important to keep them apart. The whole future of the joint, whether it is to be movable or permanently stiff and crippled, depends upon whether the capsule is deeply involved or not,—whether the bacteria are merely in the joint cavity or whether they have wandered out of the cavity and infiltrated the capsule. If the deep capsule is unaffected, the nature of the exudate is not of decisive moment—whether serous, bloody, fibro-serous or frankly purulent, the damage is capable of complete repair. If, however, the synovial lining is destroyed, if the capsule is swollen and inflamed, the joint is gone. The swelling will close the fine vessels that pass from the capsule into the ends of the bone, the bone will atrophy, granulations will sprout from the synovia, cover and erode the cartilage, adhesions will form, and the joint, if it does not ankylose altogether, will be permanently roughened and stiff. These two forms, then—the exudative and the phlegmonous—should be recognized and kept apart.

The exudate may consist of turbid or bloody serum and fibrin or of frank pus—empyema. It first distends the loose para-articular bursae. The joint is swollen, not cylindrically, but irregularly. The contours of the distended and fluctuating bursae stand out. The adjacent soft parts are but little inflamed—neither hot, tender nor painful. The joint may even be moved to some degree without pain. The temperature is usually high, but there may be remissions in the morning. There may be sweats, sometimes even chills. The white count is increased. The swelling alone may be the distinguishing feature,—the other symptoms moderate or absent. The irregular, fluctuating distention of the para-articular bursae and the aspirating needle make diagnosis certain. One must be on the lookout for these joints. Septic patients may not complain of them nor speak of them spontaneously—they are not painful enough.

If pus is found, the cause—a foreign body—should be removed and the pus drained off. The joint, however, should not be left open. We have learned that if the cause of a peritonitis is removed, the belly will usually take care of itself; that to leave it wide open in the hope of draining it is not only unnecessary but harmful, and that the best way to keep the peritoneal endothelium intact, to keep it from forming adhesions, is to let it alone. So with a joint. If it is kept open, exposed to the air or covered with gauze, both synovia and cartilage are lost. The synovia turns into granulation tissue and the joint obliterates. Therefore, let the pus out through a small stab, just large enough for a drain, keep the cavity intact and remove the drain early, as soon as the pus disappears. If the joint is opened wide to extract a foreign body, the synovia should be sewn up loosely, and a smooth, non-irritating drain, preferably a glass tube, introduced. It is interesting to watch the drain. The day after operation, or perhaps in 48 hours, it will contain, not pus, but clear serum or a transparent yellow coagulum. This is the time to take the drain out. The man may still have fever and the joint may be full of fluid again the next day. The fluid does not matter; it does no harm but good. Distention will keep the capsule from shrinking and adhering. In the course of three or four days the temperature will begin to fall and the swelling recede. If it continues, the joint should be aspirated to see whether it does not contain serum instead of pus before it is reopened. One or two further aspirations, or perhaps another 24 hours of drainage through a stab wound may be necessary for the exudate to disappear permanently.

The joint may be irrigated through the drainage tube. Payr recommends leaving 10 cc. of camphor-phenol in the cavity; others[2] have gotten much benefit from Carrel-Dakin's solution. This is probably the best antiseptic to use; it not only sterilizes the joint, but dissolves fibrin and coagula. If but an isolated part of the cavity is involved, irrigations or injections should not be practised; in any case they should be gentle. Pressure may force bacteria into bursae or pouches originally uninfected.

Several days of fever need cause no alarm. Temperatures of 102-103° quite commonly follow arthrotomy.

Blood in an uninfected joint remains fluid a long time, for weeks,—an infected hemarthros contains small shreds and clots. A smear will show an undue proportion of leucocytes, but a culture may be necessary to determine finally the presence of bacteria. If the exudate is bloody, antiseptics like camphor-phenol, which clot blood, should not be used.

We stated that a joint consisted of a series of communicating cavities rather than of a single large one, and that even the large main cavity was divided into separate chambers. Some of these may be infected, while others are not. A knee may contain pus under the quadriceps and in front of the crucial ligaments and clear serum behind. The elbow may have pus in the olecranon fossa and be unaffected in front. In these cases of isolated empyema it is important to know where the pus lies, to see where the swelling is, and which part of the joint fluctuates. If the pus lies in front, drain the front. If behind, drain the back. If it lies in a bursa, drain it. If in several, drain each one. But do not drain the unaffected portion of the joint. Let it alone and, above all, do not pull a drain through from the purulent into the uninfected part. The usual text-book incisions are rarely indicated. Through-and-through drainage across the knee above the patella, for instance, is quite useless. Early cases had better not be treated with traction—the distention of the joint may let pus flow from an infected pocket into healthy parts.

Until the swelling has gone and the temperature fallen, the joint should be kept quiet in a splint and treated by some method of hyperemia, preferably baking. Passive congestion is not so good. As soon as temperature and fluid have disappeared the splint should be removed and the man encouraged to move his limb; actively at first, then with semi-active exercises in some form of swinging apparatus.

All energy should be bent upon prompt treatment. In this exudative form of arthritis we can save not only life and limb, but the joint, provided we get at it before the capsule is invaded.

In the second form of infectious arthritis, in the capsular phlegmon, we must content ourselves with more modest aims. We cannot hope for the joint. We must strive for life and limb. A phlegmon presents a picture quite different to that of an empyema. Tenderness and pain are marked, the joint is held anxiously stiff. The slightest movement is painful, but the swelling is less than in empyema. The contours of the joint can no longer be made out; the spindle-shaped swelling reaches all the way around the limb. There is periarticular edema above and below the joint, but the borders of the capsule may sometimes be felt through it as a hard ridge. The skin is thin and hot, red or cyanotic. The muscles are much wasted. If the phlegmon is of long standing, the region may be riddled with sinuses that pour out a thin watery pus and flakes of fibrin. From their mouths protrude thick, glairy granulations, covered with a firm membrane that makes them bleed when it is pulled off. The membrane is characteristic. A sinus that discharges much thin pus and whose granulations are covered with membrane is almost pathognomonically certain to lead into a joint. The joint itself is usually shrunken and empty rather than distended with fluid. The pus comes mainly from neighboring bursae or intermuscular abscesses. The capsule is swollen, boggy, reddened, and bleeds easily. The joint cavity is obliterated by organized fibrinous deposits. The cartilage is eroded; its edges are overgrown by synovial granulations. It may be undermined by them in places and exfoliate in green or yellow flakes, exposing the granulations that cover the end of the bone. If the phlegmon is the result of an osteomyelitis that has found its way into the joint through a fracture, the epiphyseal marrow may be full of pus, the ends of the bone black or green, dry and necrotic, and the blood sinuses plugged with dark clots or pus. The x-ray will show decalcified bone; the corners of the epiphyses will be irregular and hazy.

As time goes on the bursae and weakest parts of the capsule give way, and the pus pours out into certain typical spaces between the muscles. It may appear at so great a distance from the wound that one may never think of its articular origin unless one has learned to recognize these long tubular pus sacs. A suprapatellar bursa, for instance, breaks through into the loose space under the quadriceps, makes a huge abscess along the front of the thigh, and appears at the inside of the groin, or below and behind the trochanter. The bursae below the heads of the gastrocnemius break through into the deep muscular planes of the leg and reach the skin at the side of the Achilles tendon, above the ankle. The shoulder joint breaks through along the biceps tendon and appears at the inner side of the biceps, above the elbow. Waxy edema or brawny infiltration of a limb, without much tenderness, should excite suspicion of this form of abscess.

The temperature in capsular phlegmon is continuous, but it need not be high. Remissions alternate with exacerbations as new bursae are involved and fresh abscesses appear. The white count is moderately increased—10,000 to 18,000. Loss of sleep and sepsis cause the men to fall away rapidly; drenching sweats, septic diarrheas, amyloid, apathy and coma signalize the danger of death. In the hip joint the temperature may be continuously high, as in typhoid, or intermit-

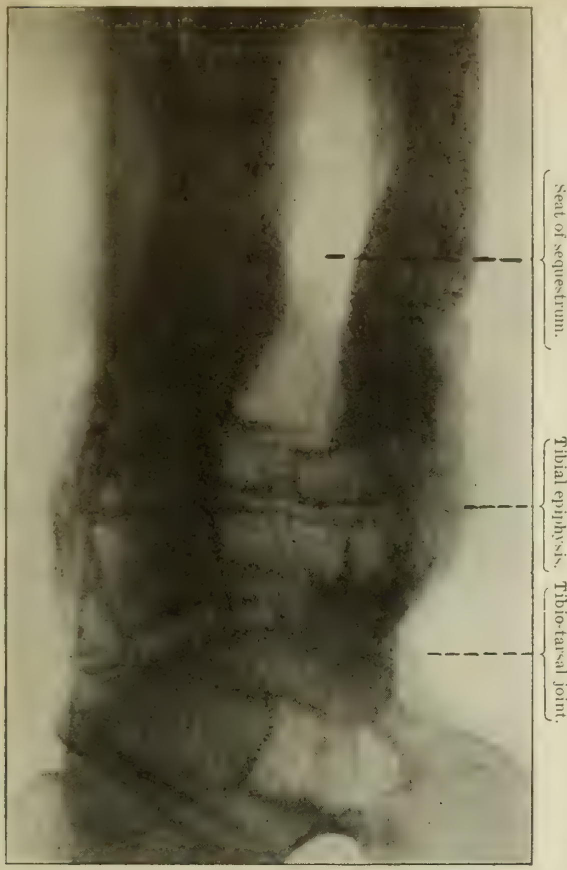


Fig. 1.—Obliteration of tibio-tarsal joint after osteomyelitis of tibial epiphysis. Joint remained free of pus.

tent, as in malaria; the depth of the joint conceals it from examination so that mistakes for one of these diseases are by no means impossible.

As the man recovers, the joints stiffen and contract in typical positions of flexion. The swelling recedes, the sinuses close, but muscular atrophy remains, and all attempts at restoring motion by passive or active exercises are unavailing.

Treatment offers great difficulty. One will never cease to have patients who, whether they recover or succumb, one would wish to have treated otherwise.

A certain number of phlegmons may be prevented; all of them, perhaps, if the men were treated immediately after injury by sacrificing numerous joints. The indications in the two extremes are simple; empyemas—the lighter cases, may be prevented from going on to a phlegmonous course by proper early treatment as outlined above; in the graver cases—obviously infected joint fractures—the joint should be sacrificed from the beginning. It should be opened widely as soon as practicable, the path of the projectile, shreds of fascia and blood-soaked tissues excised and foreign bodies extracted. The ends of the bone should be inspected; loose fragments and those attached by slight shreds of periosteum, whose life appears improbable, should be removed. The joints will be stiff at best. If we leave bone that is likely to die we stand a good chance of having a suppuration that will cost life or limb. The joint should be filled with an antiseptic or irrigated with the Carrel-Dakin solution. If this solution is not used multiple drains should be led out of the dependent parts, *i.e.,* the back, and the capsule loosely closed in front. The limb should be immobilized in a splint or fenestrated cast and kept quiet until danger of sepsis has passed. It should not be disturbed for unnecessary dressings—too many are as bad or worse than too few.

The cases which are hard to know how to treat are those lying between these extremes, but where the phlegmon is well established. We are beset by difficulties at every turn. If we wait too long we lose the man. If we amputate too early we lose a limb which might, perhaps, have been saved. If we immobilize it is difficult to watch the joint. If we do not, sepsis continues. We are between many fires; certain general principles of treatment, however, apply everywhere.

A phlegmonous joint should be securely fixed in slight flexion by a well-fitting splint, or by a circular plaster cast fenestrated widely enough

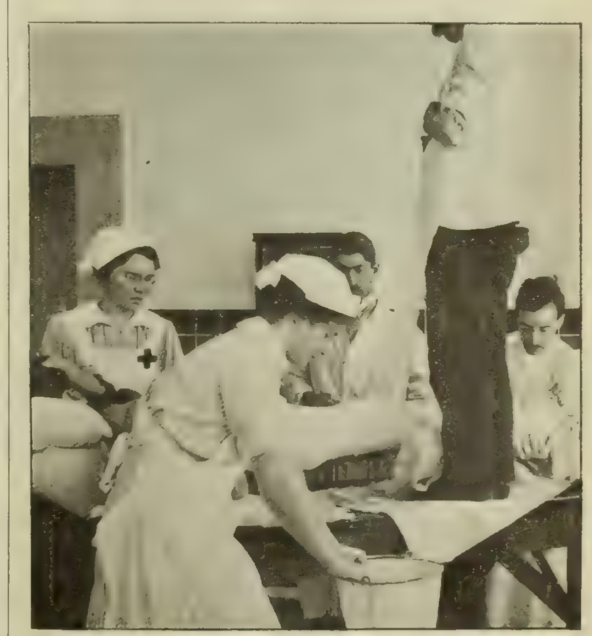


Fig. 2.—Changing cast for injury of knee.

for the limb to be watched and kept immovable during dressings. An interrupted bridge cast, which leaves the joint free all around, is not as good as a circular one. The joint sags down between the two halves of the cast. If the plaster or splint has to be removed, the joint should be kept quiet by slings suspended from a frame or slipped over the shoulders of an assistant, so that the patient may not move it while under the anesthetic. A glance at Fig. 2 will explain. If provision is not made for keeping the joint quiet during operation, the patient's struggles may so spread infection that the operation may do more harm than good. Every movement is followed by an exacerbation of fever and local symptoms. Unnecessary transportation to and from bed should be avoided. Small abscesses may be incised under local anesthesia without removing the splint or taking the man from bed.

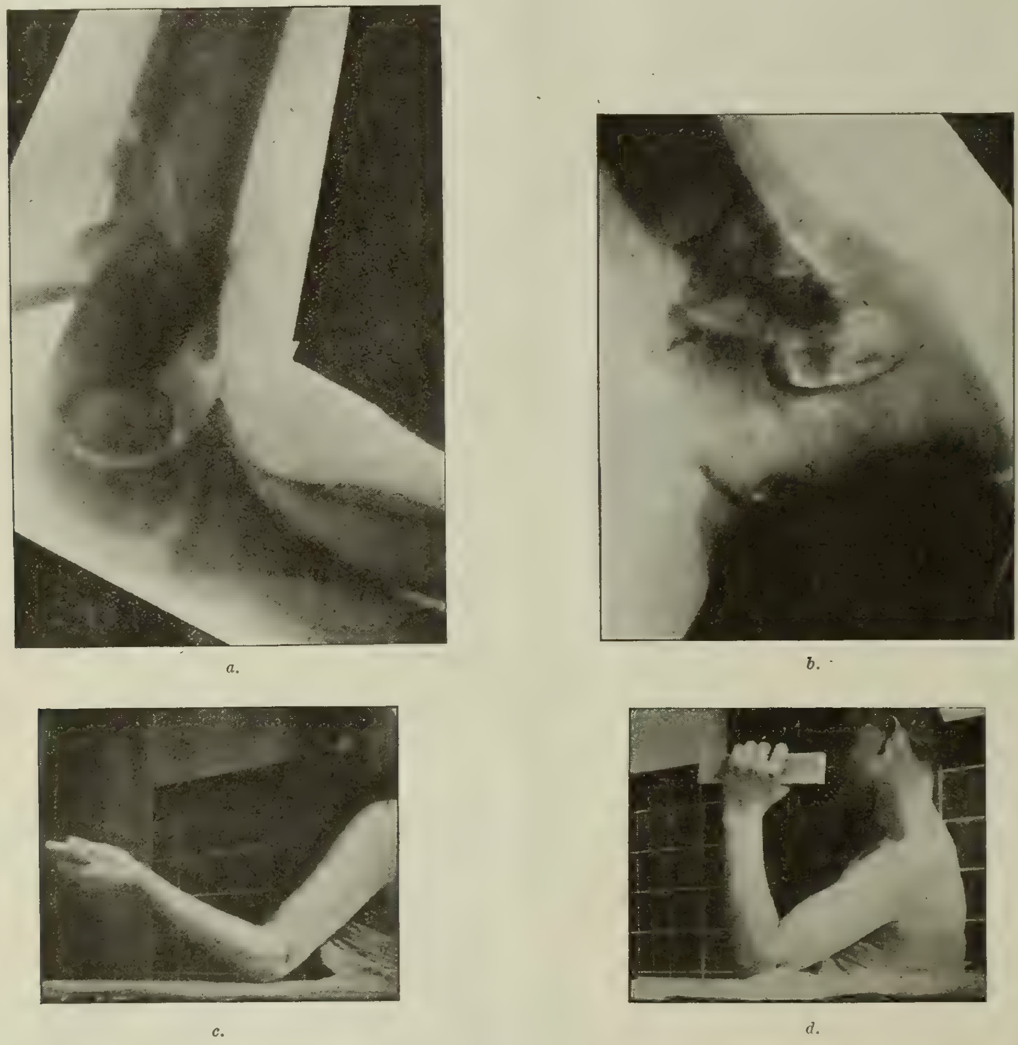

a. b. c. d.

Fig. 3.—Gunshot wound of elbow; *a*, *b*, x-rays five weeks after injury; *c*, extension and supination; *d*, flexion and pronation after conservative treatment.

Treatment varies with different joints. Sepsis in the upper extremity is not so dangerous to life or limb as sepsis in the hip, knee or ankle; on the other hand, resection in the arm is not nearly so crippling as in the leg, and usually results in mobile joints.

The shoulder, unless the bone is splintered, mostly heals without resection, often with a good movable joint. It should be treated in abduction so that pus may not sink down along the biceps, and so that if the joint stiffens, the man may still abduct by using his scapula.

The elbow is so complex a joint, and suppuration in it is so tedious that it is best to resect moderately early, say in two to four weeks, if fever and phlegmon have not disappeared by then. If the radius is broken at the neck the head becomes necrotic and sequestrates, but ordinarily the classical resection of both radius and

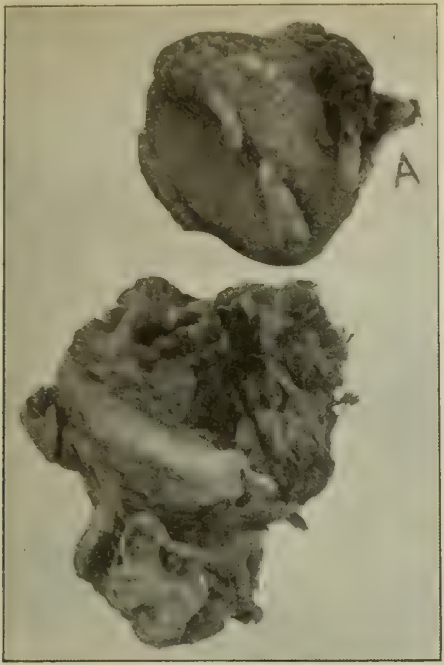


Fig. 4.—Late resection of elbow. "A", head of radius sequestrated and eroded.

ulna is better than a hemi-resection of one or the other bone, even though only one of them be affected. In joint fractures the elbow almost always stiffens, so that a later resection or some form of arthroplasty is necessary. An early resection will save this.

Sepsis in the wrist and carpus is obstinate. The hand long remains swollen and tender, and abscesses appear above and below the wrist, especially along the deep fascial planes of the forearm. Suppuration in the carpal joints is often followed by pyemia. As long as the man's general condition seems good one may wait, keep the wrist in dorsal extension in a splint, bathe the hand in hot brine, bake it and see whether the carpals become necrotic before excising them. The wrist stiffens, but the men have a fair grip if it stiffens in dorsal extension; even excision of the carpals leaves a useful hand. If excision is done early enough, exarticulation at the wrist will rarely be necessary.

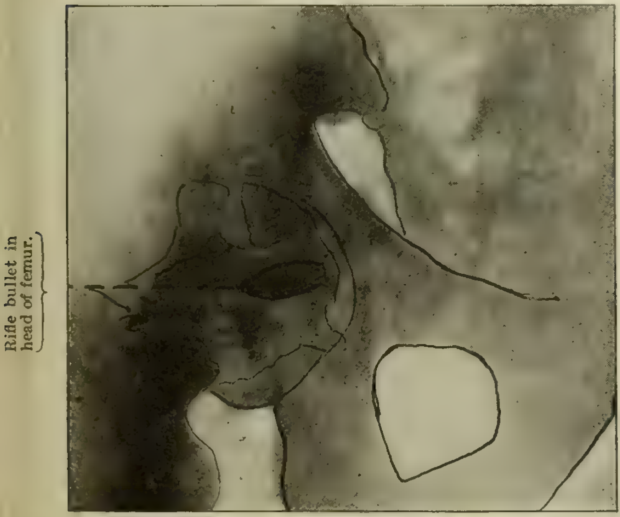


Fig. 5a—X-ray 11 days after injury.

Capsular phlegmons in the lower extremity and their sequels give some of the gravest cases in military practice. Septic hips make long and high fever. One recognizes them mainly by tenderness over the head of the femur at Poupart's ligament. Mobility may be not much impaired. If recognized, they need not be so much dreaded as suppuration in the knee. A broken head of the femur should be removed early; it will die and rot and have to come out anyway. The joints should be left well open after resection and drained to the rear and outside. Jones' long frame and adhesive plaster traction will hold the leg quiet. A plaster spica is almost impossible to keep from getting foul and the men develop bed-sores under it. The joint may contain very little pus. In one case I suspected suppuration from the continued fever and joint tenderness. I opened the hip, but could find nothing abnormal. I closed the joint. The man

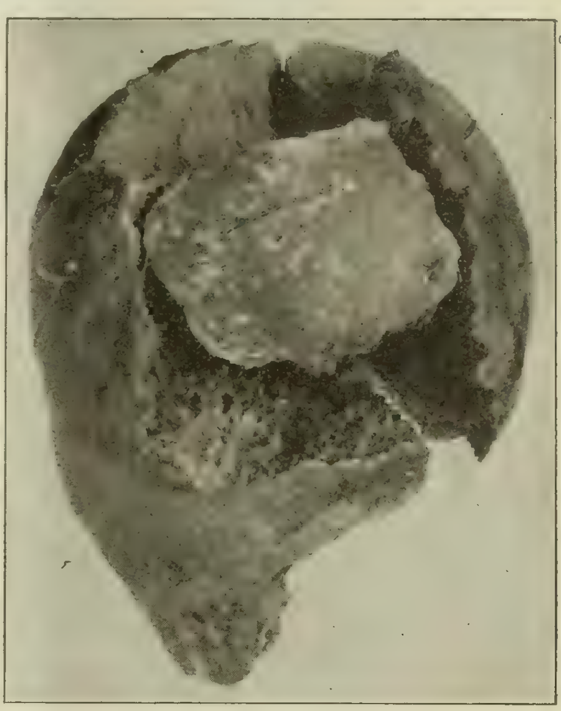


Fig. 5b.—Gunshot wound. Fracture of head of femur. Rifle bullet found in head of femur. Septic hip joint. Necrotic and putrid head removed 11 days after injury. Recovery.

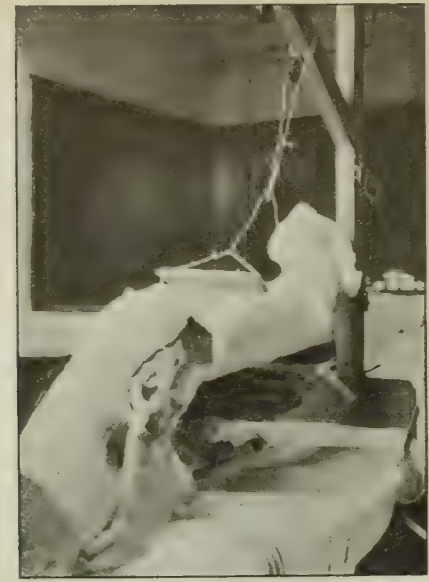


Fig. 6.—Suspended and fenestrated cast for wound of knee.

got well and kept a perfectly movable hip. The joint must have been infected in spite of the apparent absence of pus.

The most difficult joint phlegmons to treat are those of the knee. I think one of two courses is best: The first is to treat them conservatively, immobilizing with Thomas splints or widely fenestrated plaster casts in a few degrees of flexion, suspending the whole splint from a frame, baking the joints and watching them daily—not only the knees but the men—incising abscesses as they appear, irrigating with Dakin's solution, and continuing this treatment until the knee is quiescent. If, however, the knee gets worse and the general condition becomes alarming, one will have to exarticulate or do a Gritti operation. In the Gritti the patella should be left in the anterior flap and wired into place later, after the wound is clean. The disadvantage of this conservative method is that by the time one decides to exarticulate, multiple incisions of abscesses have so spoiled the soft parts that one gets but a poor stump. The other plan is to do an early resection with posterior drainage or with the Carrel-Dakin irrigations. This procedure is the one to follow in shell wounds complicated by fracture. To be of use, the operation should be done before para-articular abscesses have burrowed their way up and down the limb. Once the pus has traveled away from the joint, resecting the ends of the bone will not save the leg.

I can heartily warn you against the other method of treatment—the method of opening the joint wide, cutting across the crucial ligaments and splitting open all the bursae. It looks beautiful when you have done operating; the joint is wide open, everything is exposed, and if you put on a few pounds of traction you may separate the femur and the tibia for an inch or more, but—the men all lose their legs. The back of the tibia becomes rough and erodes the popliteal artery, and it bleeds, or abscesses burrow up and down, and you have to amputate anyway.

There remain, of course, early amputations and exarticulations. Military exigencies may force one to them, but they should not be done if there is a chance of watching the man while his limb is in danger.

Suppuration in the ankle and the tarsals is as tedious and painful as it is in the hand, and more dangerous. Suppuration in the foot seems prone to make all sorts of unforeseen complications—thrombophlebitis and encephalitis and pulmonary infarcts, and other rare sources of anxiety. Apart from these complications, if one

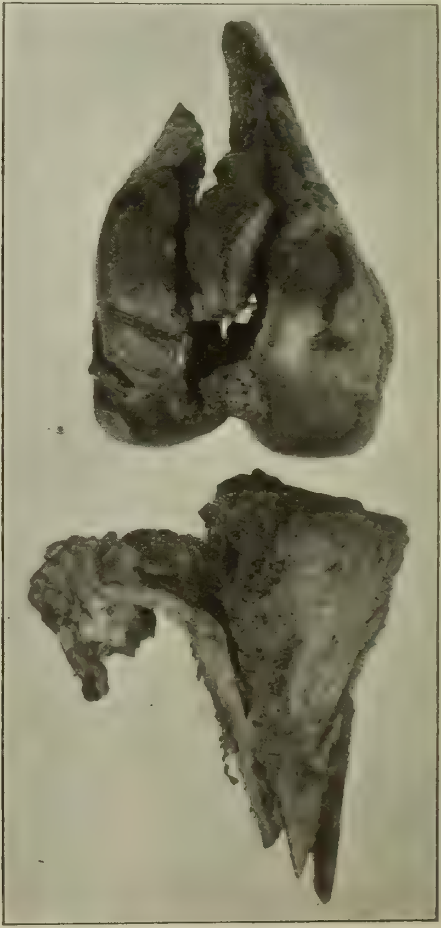


Fig. 7.—Loose bone removed at prophylactic resection of knee four days after injury.

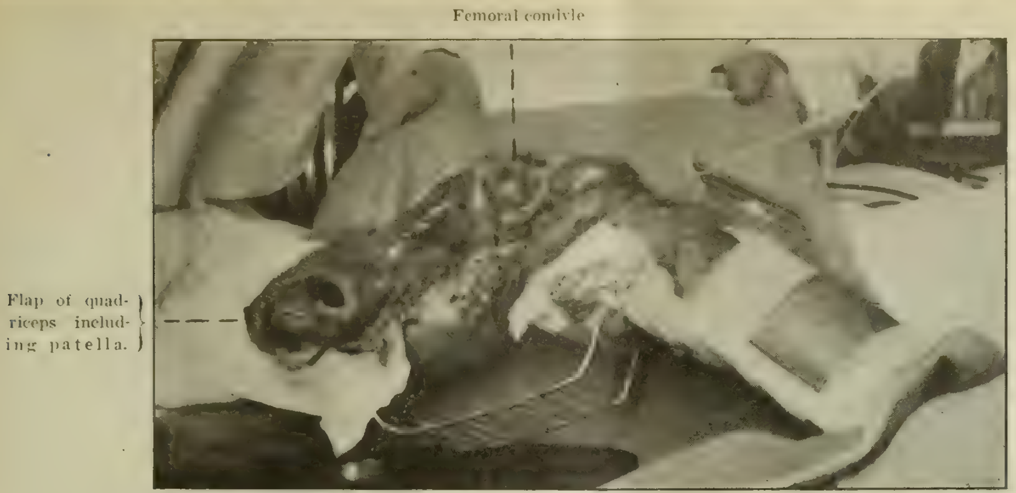


Fig. 8.—Capsular phlegmon of knee with intermuscular abscesses; joint opened widely. Open wound treatment. Subsequently erosion of popliteal artery, fulminating hemorrhage, exarticulation, finally recovery.

keeps the foot quiet in a splint or cast, bakes it or soaks it in hot brine, it tends to get well. Para-articular abscesses appear, or rather, conceal themselves in the sole, where the thick skin and fascia hide them, unless one watches closely. They should be incised from the inner side of the foot, so that the man may not tread on the scar afterwards. If suppuration does not cease, the astragalus may be resected with benefit and without doing much harm to the foot. One certainly should not amputate without trying both this and all other kinds of atypical tarsal resections. Any kind of a misshapen elephantine foot, if it is sound and has good skin and fat on the sole, is better to walk on than no foot at all.

Now we have not considered wounds, but traumatic infections of the joints. Are there no joint wounds that are not infected? Yes, some perforating gunshot wounds heal perfectly aseptically under conservative treatment. Some even with foreign bodies, especially rifle bullets, may be treated as though they were aseptic if one gets them early. As soon as circumstances permit of aseptic operating, the wound of the soft parts should be excised, the joint opened, the foreign body extracted, and the joint closed. If asepsis is doubtful the synovia should be closed, but the skin and other soft parts left open or sewed together quite loosely; or the joint itself may be drained with a glass tube for 24 hours. A few days of fever, 102° or so, either before or after operation, do not spell disaster. All these men have temperatures which often drop if the limb is immobilized and the patient left alone.

Aseptic cases, like empyemas, should be allowed

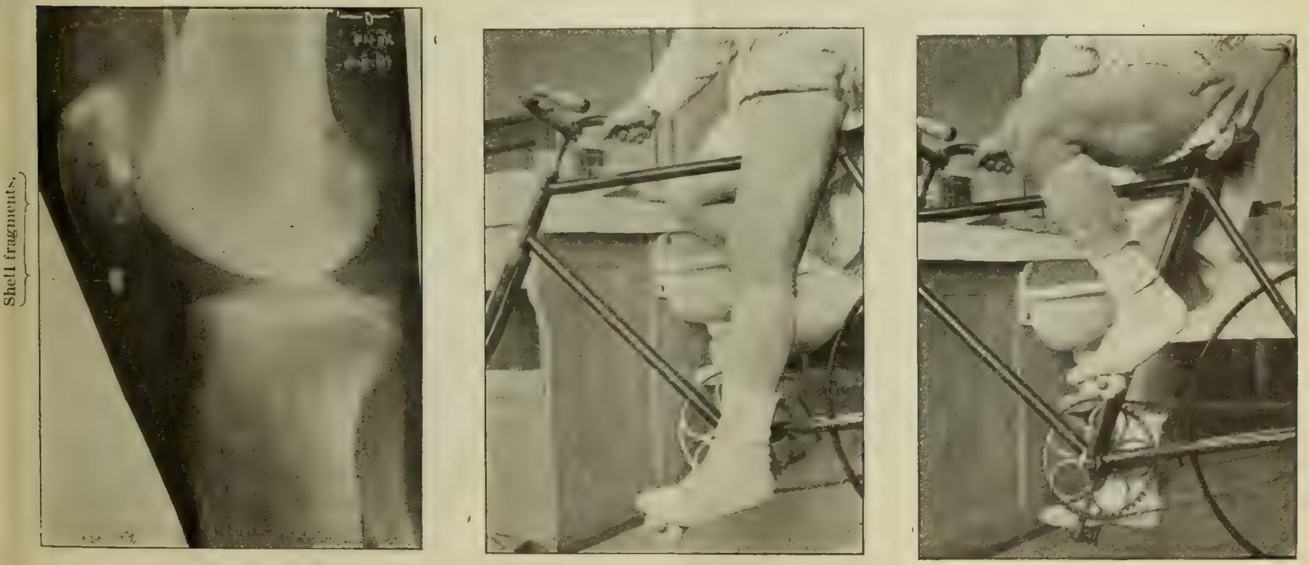


Fig. 9.—Shell wound of knee; fracture of patella. Synovia closed by suture. Recovery of function four weeks after injury

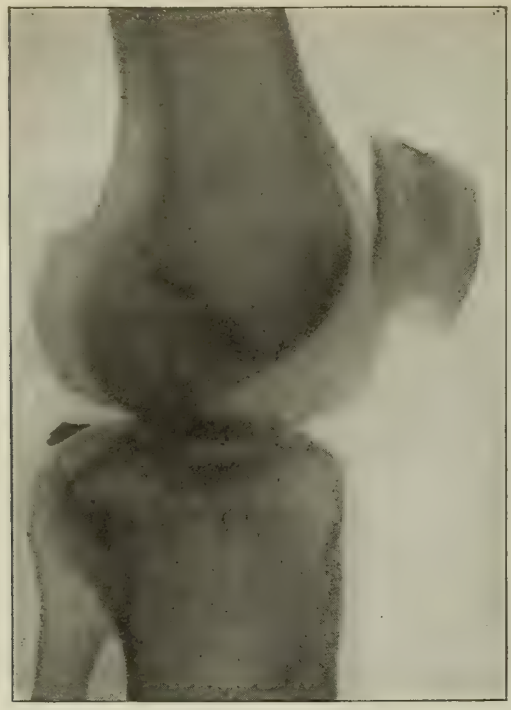


Fig. 10.—Piece of steel imbedded in posterior part of external semilunar for three years. Chronic arthritis; lipping of upper edge of patella and upper edge of rear of femoral condyles.

active motion as soon after operations as fever, pain and tenderness permit. Capsular phlegmons should be kept quiet. Endeavors to reestablish motion by manipulation are quite futile and cause the patients needless pain.

Foreign bodies should be removed, even if they heal into a joint aseptically. It is true that, take it all in all, more harm than good has been done in the present war by hunting for bullets, and that extraction operations have caused much needless mutilation and suffering. A joint, however, is no place for a foreign body. An aseptic piece of steel will wear off the cartilage when the joint is moved, cause roughening and incongruity of the articular surfaces, and end in a chronic deforming arthritis. A case in point: A man who had injured his knee by a blow from a steel wedge three years previously had had recurrent attacks of inflammation and hydrops. Flexion and extension were considerably impaired. An x-ray showed a chip of steel in the posterior capsule, although the man had no knowledge that anything had entered the knee at the time of injury. On opening the knee a spot bare of cartilage was seen on the inner femoral condyle. All about it were signs of deforming arthritis. In places the cartilage was peeling off; in others it had peeled off and flakes lay free in the joint. The steel chip was

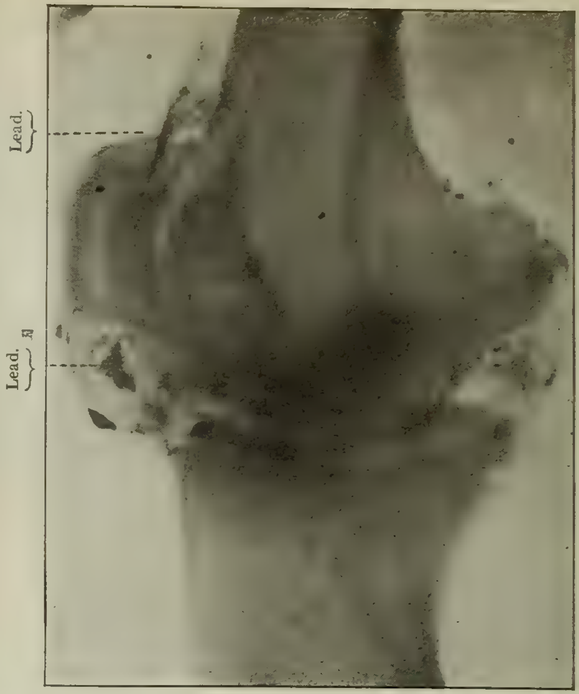


Fig. 11a.—Old gunshot wound of knee. Subsynovial deposits of lead. Severe deforming arthritis.

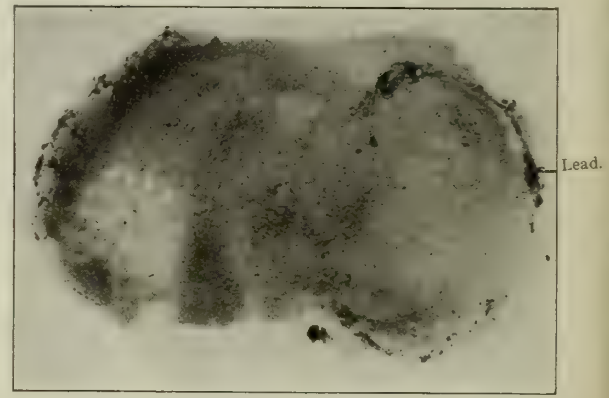


Fig. 11b.—Same case as 11a. X-ray of resected femoral and tibial condyles. Lead in synovial tissues. Erosion of bone by synovial granulations.

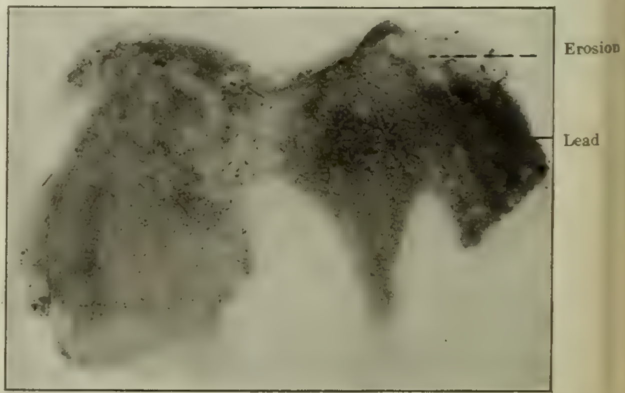


Fig. 11c.—Same case as 11a. X-rays of resected femoral and tibial condyles. Lead in synovial tissues. Erosion of bone by synovial granulations.

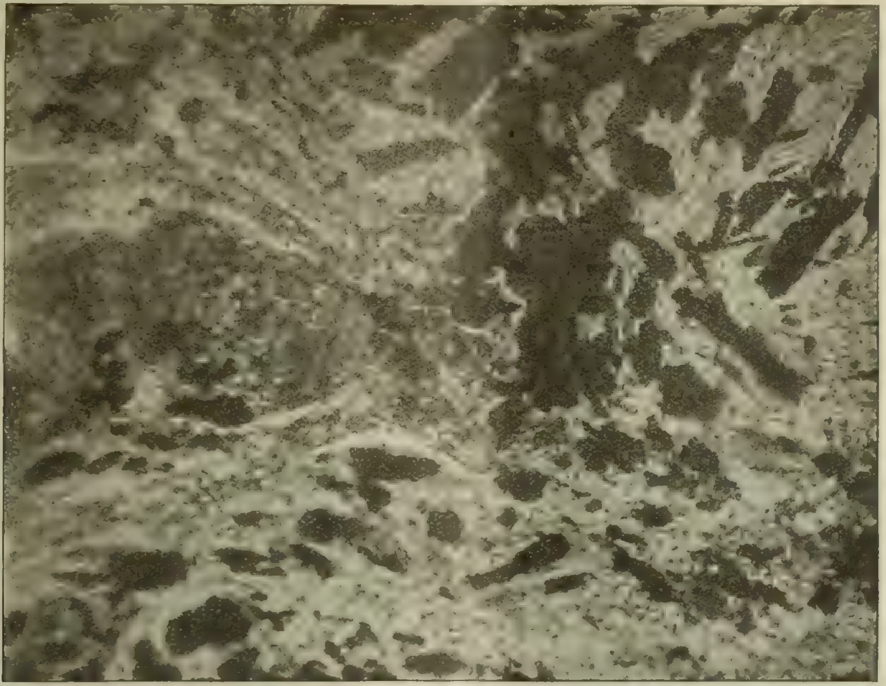


Fig. 11*d*.—Same case as above. Sections of subsynovia, showing lead deposits.

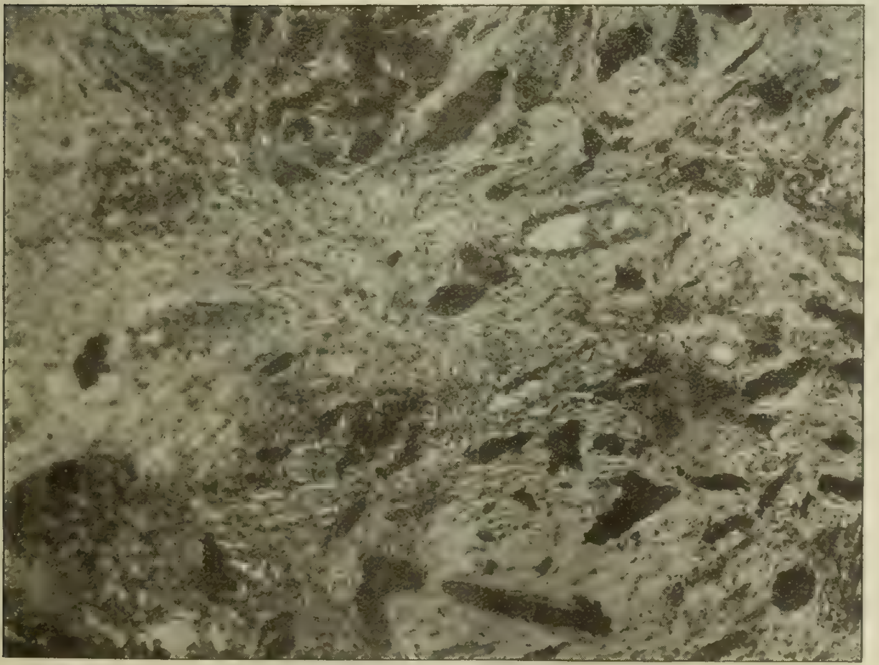
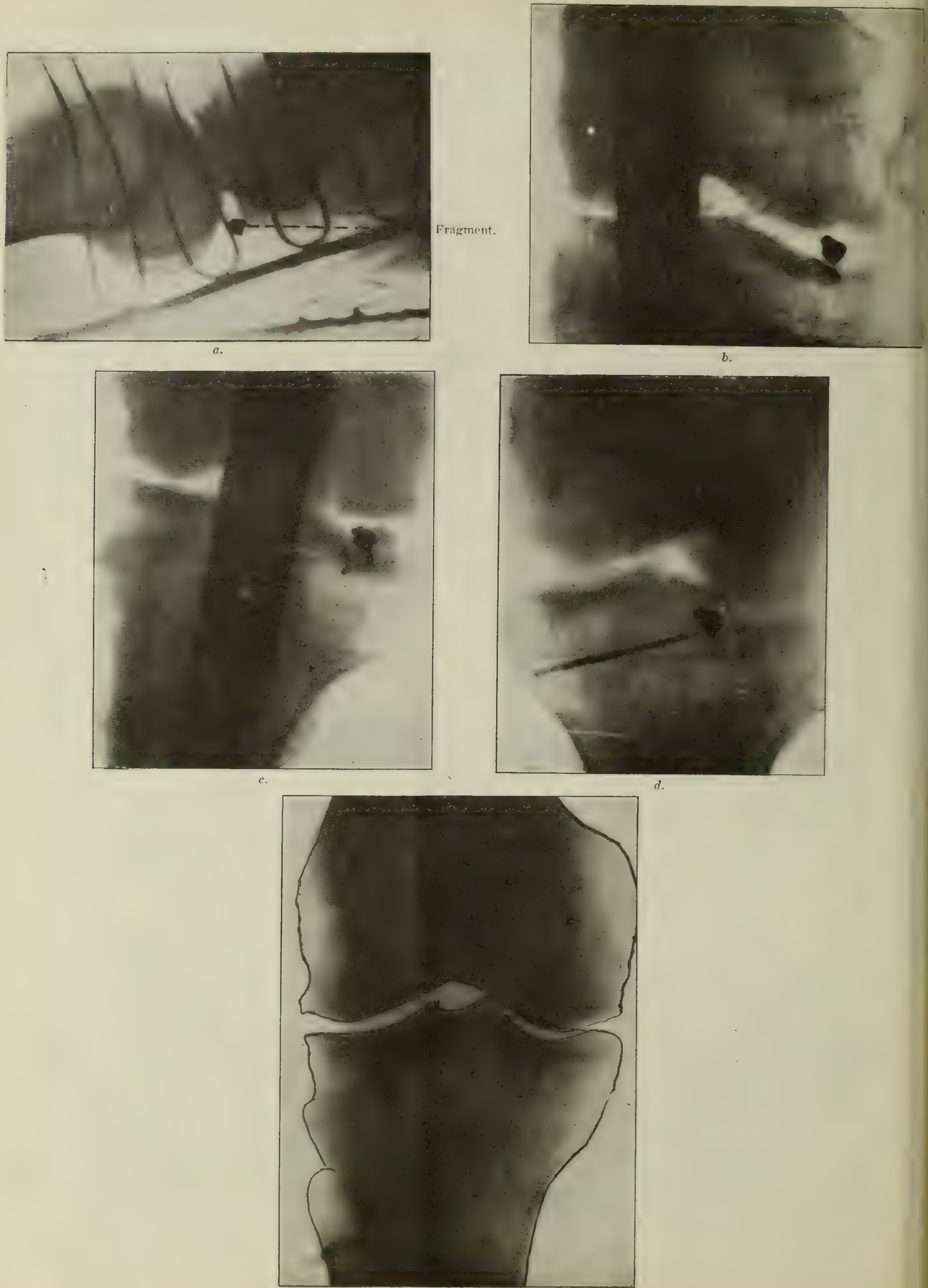


Fig. 11*e*.—Same case as above. Sections of subsynovia, showing lead deposits.



a. b. c. d. e.

FIG. 12.—Localization of foreign body by needle method of fluoroscopy. (Holzknecht) *a.* Shell fragment in semilunar cartilage. *b.* First needle has missed fragment. *c.* Second needle has struck it; x-ray in axis of needle. *d.* X-ray perpendicular to axis of needle. *e.* Shell fragment removed. Recovery. Subacute arthritis with considerable limitation of knee motion.

found imbedded posteriorly in the external semilunar and removed. The joint, however, was so changed that it will never regain free motion.

Lead (from pistol bullets or shrapnel) is particularly dangerous. It seems partly to dissolve in the synovial exudate and to settle as a grayish-white deposit under the capsule. It may be seen in sections as black grains lying in the subsynovial tissues. Several men who had carried aseptic pistol bullets in their joints for a number of years have developed an uncommonly severe hypertrophic arthritis.

Extraction operations should not be entered upon lightly. They should be done with competent assistance, under good asepsis and with a good x-ray apparatus. The foreign body may be very difficult to find. It often traverses the joint and is stopped by hard, thick capsule or cartilage. If it lies in tissue of this consistency the finger cannot feel it even when a millimeter or two from it. One may approach very closely with the scalpel and yet miss finding it. Radiographic plates by the MacKenzie-Davidson, or one or another localizing method, do not help nearly as much as the fluoroscopic screen. If the hospital is equipped for aseptic fluoroscopic operations the body may be extracted directly under the screen; if not, a needle may be introduced down onto it under the fluoroscope after the method of Holzknecht and the projectile removed by cutting down on the needle, which is left *in situ* as a guide.

Removal may be particularly difficult in the knee, where foreign bodies are quite typically found buried in the posterior attachment of the semilunar cartilage. If a lateral x-ray plate (like Figs. 10 and 12*a*) shows the body just above the rear edge of the top of the tibia, removal should not be attempted without the aid of a screen. A body imbedded in the cartilage may be impossible to locate without it.

The best time for removal is early—within the first twelve hours after injury. Later, if the joint enters an acute inflammatory stage, it should, if the body is small, be immobilized and treated conservatively with baking and compresses until the inflammation has subsided. The trauma of extraction will set up a strong reaction during the acute stage. Acute generalized inflammation will often quiet down after immobilization; four or five days after the fever falls, the foreign body may be removed and the joint closed loosely over a glass drain.

CONCLUSIONS.

1. Sources of joint infection are:

(*a*). Direct, from without.

(*b*). Indirect, from a communicating suppuration.

(*c*). Secondary, by extension of a neighboring process.

(*d*). Metastatic.

2. Infections may be:

(*a*). Empyematous—prompt treatment will save the joint.

(*b*). Phlegmonous—the joint will stiffen.

3. Leaving a joint wide open is harmful. Treatment should strive to preserve the synovia.

4. Foreign bodies, especially lead, induce deforming arthritis, and should be removed.

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TRENCH SANITATION.*

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In the consideration of a subject so important, it is to be regretted that more literature is not available. Physicians who have the subject from first-hand information are all more or less engaged in the work of the war, and have little time to write. The Advisory Committee of National Defense is taking up these subjects most essential to us, and is having manuals printed, revised from the English and French, which will soon be in the hands of the members of the Medical Corps. This paper will deal with the most important subjects, with a short description of the most particular methods that the peculiar environment abroad has developed in modern trench warfare, which I have collected from those who have written, and conditions which I have personally observed as battalion surgeon of the trenches in the training camp. I assure you, however, that I make no claim for personal originality, but give due credit to those who have been able to write.

You are all much better acquainted with trench conditions from your readings and from the lectures by the Allied officers than I am, so that you can easily draw upon your vivid imaginations to realize the difficulties encountered in dealing with this most important subject.

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* Read at a meeting of brigade officers at the request of the commanding general.

The vital things to be considered in sanitation of the trenches can be divided into five headings, namely: (1) Food, (2) Water, (3) Conservancy, (4) Personal Habits, (5) Prevention of Special Diseases.

(1) THE FOOD SUPPLY.

The food supply is brought to the supply depot by animal carriage. From there it is drawn as required by hand carriage to the kitchen, where it is prepared for consumption, and placed in jacketed hot boxes, which are carried to the troops in the firing line trenches by hand. The one idea in the preparation of food is the use of the heat-retaining type of cooker—"fireless cookers"—which give *en route* no smoke which might draw the enemy's fire, therefore the present vogue of the traveling kitchen or field cooker in the zone of the advance. This cooker consists of ovens and hot-jacketed boilers arranged around a central furnace, all contained in the body of a wagon. The limber contains hot-jacketed receptacles, compartments for rations, utensils, food, etc. It can be detached from the body and, being drawn by one horse, is used for food distribution while the body continues the cooking. The whole is drawn by two horses, weighs twenty-four hundred pounds and cooks for two hundred and fifty men and their officers. On the march it travels with the first line of transports. From these, or from improvised dugouts conveniently situated, food is carried by hand in jacketed boxes and covered tins through the communicating trenches to the troops at the front. The medical officer is charged with the following details:

Quality, variety, and cleanliness of rations and stores.

Quality and variety of cooking.

Cleanliness in delivery, preparation and sources of food.

Health of all persons issuing, preparing or serving food.

Kitchens protected from dirt or dust.

Towels require most detailed daily inspection.

Instead of screening the entire kitchens,—which was our former plan,—it is found that the screening of food itself is a better substitute and the fly nuisance better controlled. Screened cupboards or safes are used for meat, bread, jam, open tins, or other food attractive for flies. Eating utensils are kept covered. Simple muslin squares, weighted at the corners can be used for much of this work. Covered barrels or tins are employed for the bestowal of refuse previous to incineration. Flies have been very troublesome in France. This is due, to a considerable extent, to the dead bodies in front of the trenches in "no man's land," and as the condition cannot be prevented in trench warfare, flies must be present, and measures must be taken against them. Fly poisons are not effective unless the trenches are free from water. All débris must be collected in bags and carried to the rear at intervals. No food should be thrown away or allowed to collect, as this attracts rats and flies.

The kitchens should be constructed in shelters large enough to accommodate the rolling kitchens. The stove pipe should project somewhat above the top of the shelter, to secure good draft. In addition, numerous ventilating holes must be made. Small fires built of dry wood in the bottom of deep trenches do not betray their position. There are stoves in the support trenches in which a certain amount of cooking can be done, and where socks, etc., can be dried.

Grease in sullage water, resulting from cooking processes, is often quite a nuisance, and a simple method of getting rid of it has been devised in the form of a grease trap. A box is filled to a depth of several inches with clean sand, and a vertical partition placed in the middle, which dips down at its lower edge for a couple of inches into the sand, making two compartments. The sullage introduced into one side filters through into the other under the partition, leaving most of the grease behind. The effluent disposal is usually not difficult. The tax on the sand is lessened if the sullage be first freed by passing it through such material as hay or chopped straw (tibbin); this plug entangles the floating grease, and the whole mass can be removed and burned. The sand must be periodically renewed, and this should be done at intervals not exceeding a week, the sand being burned and replaced if scarce.

(2) WATER.

The minimum of three gallons of water is required by each man when no clothing is washed. Of this amount only three pints is used for drinking purposes. Water tanks are set up at distances of one thousand yards or more from the first line trenches, obtaining their supplies from pipes when such a system is available, or otherwise from casks. The men in the trenches have their water bottles, which are replenished from a supply of water brought up by hand. The water should be sterilized by boiling or with calcium hypochlorite. The Lister bag may be used. The chemical requires supervision and examination from time to time by titration methods to see that it has not lost its strength. From the tanks, the water is carried in kerosene tins by hand through the communicating trenches and stored as a reserve in dugouts back of the support trench. The soldiers' water bottles are filled there. Cavalry soldiers are supplied with sterilizing tablets for use in the bottles themselves. Impure water may cause typhoid, dysentery, cholera, and other diseases.

It is not expected that real baths can be taken in the trenches, but there is no reason why some provision cannot be made for washing. A reasonable amount of water should be carried to the trenches for washing, and basins may be provided. Even shower baths should be installed in a deep shelter or a cave shelter. A simple arrangement is to provide one or two kettles for heating water, tubs or casks for storing it, placed about nine feet above the ceiling of the shelter. The casks should be connected with a pipe fitted with sprinklers properly spaced. There should be a grating on the floor, and the bottom of the approach trench should have a steep slope toward a drainage pit.

(3) CONSERVANCY.

The extraordinary developments of trench warfare have created the need for so many new devices to meet the consequent new conditions that their demands for detailed comment far exceed the time at my disposal. The conditions to be met with are practically those of a siege. Many methods have been tried: one of the earliest,—an unofficial one,—one of the simplest, a sort of a reversion to the old stink-pot idea of the Chinese. It consists in placing excreta in empty tins and lobbing them into the enemy trenches which happen to be near enough. Reprisals were found so unpleasant that apparently this method has been abandoned by mutual consent— to say nothing of the disagreeable and unsanitary results in first-line fire trenches.

Next the feces were buried in latrine trenches dug as offshoots from the trench system,—the so-called trench within a trench system. The probable length of occupation and the onset of rains soon led to this method being abandoned. Here soil pollution and flooding were the principal objections.

The next modification consisted of a filth trench constructed behind rising ground or other shelter, and approached by a transverse trench cut as an offshoot from the main trench system, but this proved unsuccessful owing to the fact that it was too frequently shot up.

The only practicable solution of this important problem has been found in the system of disposal employed at present by the British, which is to use bomb-proof pits or dugouts leading out of the communicating trenches. The dugout should be deep enough to protect against any missiles except high explosive shells. Here is dug a pit and covered with a latrine seat. Incineration is impossible, for lack of fuel and because it would give the range to artillery. The method adopted has been to collect excreta in small buckets, empty gasoline tins, and similar receptacles. These are set in boxes with a sliding cover, or else have a detachable seat with supports front and back for keeping seat firm, and have a cover hinged with leather, making them fly proof. The receptacles when about two-thirds full, are replaced by clean ones. The buckets are removed by the relieved troops, who bury the contents and bring the buckets, cleaned, back with them on their return. The buckets are best cleaned over a concrete platform, and with the aid of dilute cresol solution, followed by the use of dry sawdust and a stiff brush. If fuel is available, the cans containing the excreta are preferably burned in an incinerator at the rear. If the cans are buried in deep pits, they should be well covered, first using lime or iron sulphate or crude oil to cover the excreta. A combined incinerator and deep filth trench, ten by twelve feet square by four and one-half feet deep, called the "American oil pit," has been used with satisfactory results. The buckets are emptied into the trench, and some straw, waste paper, rubbish, etc., are thrown in. Kerosene oil is poured over the material contained in the pit and the whole burned over. The heat generated serves to evaporate the liquids. When the contents have reached within about three feet of the surface, the pit is filled in with earth and a new one dug.

The commander of the platoon must have latrines dug within half an hour after reaching the trenches, and not the following morning. A man of the medical department, detailed for that duty, should disinfect the latrines daily. This man should be sent for if he does not come. The disinfectants employed are sulphate of iron, 10%; cresol, 5%; and unslacked lime or milk of lime. The health of the troops demands very careful sanitary arrangements and scrupulous cleanliness in trenches, which may have to be occupied for a considerable length of time. A supply of chlorate of lime should be kept in all trenches.

When the level of the subsoil permits, the urine soakage-pits and funnels are as useful here as elsewhere, or even more so. The urine may be handled by separate urine buckets and disposed of as already mentioned. A urine absorption pit may be dug in a convenient place in the bomb-proof pit. A pit is dug four to six feet deep and four feet square, loosening the earth at the bottom and then filling up with stones or perforated tin cans to near the top. A layer of brush or grass or sacking is placed over the stones, and the whole filled with earth, level with the surface of the ground. Funnels painted white, six inches in diameter at the top, tapering to two inches at the bottom, may be built into the four corners, or a galvanized iron trough, conveniently situated to catch the urine, may be led into it. Loose plugs of hay should be placed in the funnels. All soiled areas, as well as the funnels or trough, should be treated twice daily with a 5% cresol solution. There should be a grating for the men to stand on, and the floor of the trench should have a decided slope for drainage.

In the disposal of human bodies, the method of incineration is most sanitary, and generally satisfactory. However, the British, for sentimental reasons, have not adopted it in the present war, and I understand they have had no particular trouble in carrying out the usual methods of disposal by burial. It is probable that we shall carry out their example.

(4) PERSONAL CLEANLINESS.

Out of evil comes good, so in this war we medicos have discovered the important fact that the body louse is the transmitting agent of typhus fever. Prevailing conditions in northern France and Belgium, plus *overcrowding,* make it impossible to banish the louse entirely. Therefore, every attempt must be made to reduce this pest to a minimum. Individual personal cleanliness of the body and clothing is the only preventive or palliative method. The Sanitary Corps must do everything possible to afford facilities for the necessary delousing by the wholesale of the troops. It is essential that provision for systematic bathing be made for these men when they return to camp for their period of recuperation. On the Western front, bathing and delousing are carried out with the division as the unit. The necessity for system will be seen when it is stated that one hundred and sixty men must be bathed and deloused per hour for nine hours a day if each man in the division is to receive a bath every two weeks. This is certainly not an excessive requirement, and bathing must at least be as frequent as this. Ironing of the clothes is relied upon to rid them of lice. The clothes are, of course, disinfected by sterilization by the Thresh disinfector, or the field box disinfector, or the "Serbian barrel."

The personal use, beside frequent bathing, changing and washing of the clothing, of certain local applications, has been proved by the British to be quite effective. For killing adults, a powder known as the N.C.I. is dusted on the underclothing. This powder is composed of naphthalene, 96 parts; creosote, 2 parts; iodoform, 2 parts. About two-thirds of an ounce is required for each man. A special ointment has been found to have the effect of asphyxiating the young as they hatch out of the ova. This is rubbed into the interior seams of the various articles of clothing in the quantity of about one ounce a week. It is composed of crude mineral oil, 9 parts; soft soap, 5 parts; and water, 1 part. The body from the neck down may also be anointed with this paste. Recently a method said to be successful is to impregnate articles of underclothing by dipping and wringing them out in a solution of 1% each of naphthalene and sulphur in benzine or gasoline. This is the English "antiparasitic" vest and is not especially irritating to the skin. Let eternal vigilance be your motto!

(5) PREVENTION OF SPECIAL DISEASES.

Nearly all epidemic diseases are transmitted by water, the soil, or from man to man. Large commands crowded into a small area are particularly liable to infectious diseases and, therefore, all sanitary measures prescribed must be rigorously enforced. We must not forget that trench life is very monotonous and trying, and therefore company commanders must use every effort to keep their men comfortable and cheerful.

Trench feet, due to prolonged exposure to the cold and wet on dependent limbs, can be prevented to large extent by the following precautions:

1. Boots and shoes should be at least a size too large, so that two pairs of socks may be worn.
2. Rubber hip boots should be furnished if there is standing water in the trenches.
3. General circulation must be kept up by keeping body warm and dry. Wear waterproof clothing, especially in rains.
4. Every 24 hours the boots should be removed, the feet rubbed, and dried, and dry socks put on.
5. Thorough rubbing into the feet and legs of whale oil or anti-frostbite grease.
6. If rubber boots are not worn, the boots should be well oiled or greased.
7. Drainage of trench or dry standing provided. Avoid standing still as much as possible.
8. Keeping the legs elevated while resting, and the avoidance of the sitting posture in sleeping.
9. Avoid fatigue by keeping up the physical condition of the soldiers by proper nourishment and warmth. Frequent use of hot soups and rum fills the bill.
10. Puttees should be loosely applied.

Trench fever is another of the developments of the peculiar environmental conditions of the war "over there." This is a relapsing fever, resulting in considerable impairment of efficiency, although there have been practically no fatal cases. It is believed to be transmitted by the bite of the infected lice, aided by cold, wet and fatigued troops.

Trench nephritis is probably brought about by the inevitable conditions of the military life at the front. Fortunately, it appears in a mild form and has a favorable prognosis. Symptoms soon yield to rest in bed and a milk diet.

Tetanus seems to be a question of soil pollution plus wounds. All victims of wounds, of whatever nature, simple scratches included, are given at the earliest possible moment after the receipt of the wound, a prophylactic subcutaneous injection of 500 U. S. Army units of tetanus antitoxin contained in about 3 cc. of horse serum. In case of severe wounds a second dose of the same strength is given on arrival at the base hospital.

Another unpleasant and often dangerous complication of wounds, also owing to soil infection, has given rise to most serious trouble. Most of these infections are due to the Bacillus aerogenes capsulatus of Welch, usually called by the British B. perfringens. Prophylactic treatment depends on loose bandaging of the limb, frequent changing of dressings, sufficient drainage of the wound, and the introduction of an antitoxin.

The infectious diseases—typhoid, paratyphoid, dysentery, diphtheria, cholera, cerebrospinal meningitis—should be constantly watched for and guarded against. It is by early detection and prompt action that an outbreak, which may have serious and far-reaching consequences, should be prevented.

Recently I saw an order from the Headquarters of the American Expeditionary Forces, reading as follows: "In all cases of venereal diseases, charges will be preferred as a matter of course, regardless of the circumstances of the case, or the supposed character of the man involved. It is not intended to allow subordinate commanders any discretion whatever as to whether charges shall be preferred. Courts-martial of this command will not accept as a defense in cases of this kind the fact that, at some specified time or times, prophylactic treatment has been taken. Upon proof that the disease exists, punishment will be awarded." This ruling has done much to stamp out this enemy.

In closing let me ask for coöperation and team work between the line officers and the Medical Corps, that efficiency and loyalty may ever be maintained.

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PREVENTION IN PUBLIC HEALTH.*

By D. M. Lewis, M.D., New Haven, Conn.,

Epidemiologist, Board of Health.

The title suggests to you, gentlemen, that I am going to talk to you in terms of the usual expressions, like "cover your sneeze and prevent infection for others." If now you are interested in internal medicine, and especially in heart diseases, you obtain by an instrument of precision the usual circulatory curves and the abnormal ones by means of the electro-cardiograph, and then base your treatment on the reading of those curves. That there are also curves in public health work in terms of communicable diseases may be shown, and that by treatment based on such curves, records expressed as preventograms may be as exact as those based on heart study.

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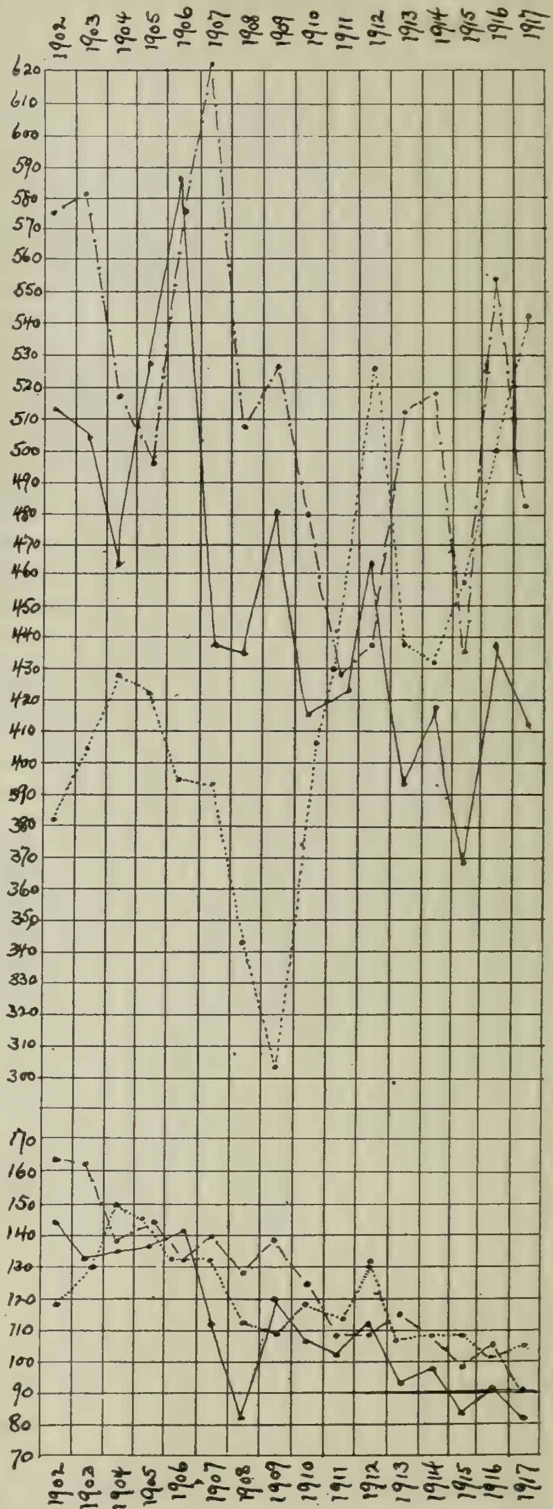
* Read before the County Public Health Association, March 7, 1918.

By charting in terms of 100,000 population the deaths under age 5 (Chart 1), for the three largest cities in the State (the figures gained from the State Board of Health Reports), there will be seen a very definite pulse wave for 1906, with subsidiary waves for 1909, 1912, 1914, and 1916 in the record for New Haven. That for the other two cities is not dissimilar in the case of Bridgeport, though that for Hartford loses its similarity during 1908 and 1909. As this is also in common in all the charts, I will explain that at this time as being a jump in population in 1907 from 98,490 to 101,150 in 1908, 103,808 in 1909, while the population comes back to 98,915 in 1910, and from then on is again in rising ratio with the other cities. This excess population, then, during those years gives apparent absence of similarity. The peak for this city in 1916 is explained by the abnormal number of deaths from poliomyelitis of non-residents brought to our isolation hospital. If now you examine our wheel of fortune (?), now labelled that of certainty (see illustration, this Journal, April 11, 1918) you will see that these curves are exactly the years of measles frequency in terms of deaths. That there is no peak for 1917, when there were more deaths than the last previous maximum of 1906, constitutes what I am pleased to call a preventogram. When we examine the deaths under age 1 per 1000 births, you will see the same peaks of maximum and subsidiary waves for the same years. You will note the absence of a peak for 1917, and there stands out more prominently a remarkable drop in the curve for 1907 and 1908, not simulated either previously or later in this city nor at any time in the curve of the other two cities. I have shown that this is the expression of our work in beginning municipal milk examination for the purpose of feeding babies and infants, fresh, raw uninfected milk, the results of which have appeared in other articles. This also then represents a preventograph curve. I have added the curve of the City of New York to show that, while they lay their preventive work to pasteurized milk and infant welfare, this city, which has been said to have done nothing for infant welfare work, has a record that as yet has not been distanced.

Chart No. 1.

Bureau of Communicable Diseases.



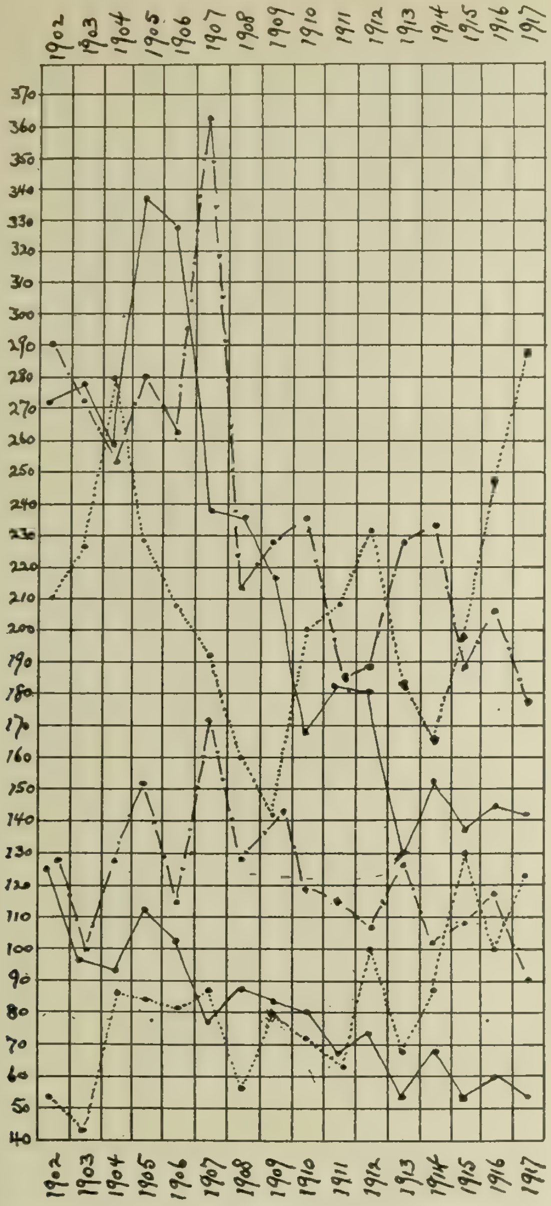
Bridgeport, —·—·; New Haven, ———; Hartford, ...

Upper part of chart shows deaths under age 5 per 100,000 population. Lower part shows deaths under age 1 per 1000 births.

If now we study the chart for communicable diseases, to which there is added diarrheal diseases under age 2, as being to me definitely com-

Chart No. 2.

Bureau of Communicable Diseases.



Bridgeport, —·—·—; New Haven, ———; Hartford, ...

Upper part of chart shows deaths from communicable diseases per 100,000 population. Lower part shows deaths from diarrheal diseases, under age 2, per 100,000 population.

municable, as well as to lift the curve sufficiently above the diarrheal curve as not to cross it, as it would do if studied without it, you will see a very different curve record. The maximum wave is for 1905, with subsidiary waves for 1911, 1914 and 1916. Turning again to our wheel, you will see that 1905, 1911 and 1916 were grippe years; so were 1908 and 1913, but of not sufficient intensity to give curve peaks. I have termed them the waves of respiratory diseases. There follows on these waves each succeeding year thereafter very nearly proportionate measles waves accompanied and followed by increase of diphtheria, whooping cough three times out of four accompanying the measles. I would say here that it is more than a coincidence that after a measles epidemic you placard in the later season for that disease the individuals whom you previously placarded for measles. I wish to call attention to the approximate obliteration of curves in this period—1914-1917—in terms of the other two cities as showing true preventograms, based on my field work, the results of which in terms of separate diseases you are familiar with from my previous talks to you. Remember also that the excess non-resident deaths in poliomyelitis for 1916 would turn the peak of the slight curve in reverse. There is one especially notable point, namely, that the rate for communicable diarrheal disease for this city exceeds but slightly the rate for diarrheal diseases only of another city. It is in such terms that you may figure my statements in our monthly Board of Health Bulletin that we are saving 300 lives over other cities in the State who are expending two and two and one-half times the per capita rate for health work.

The curves for diarrheal diseases under age 2 run exactly parallel to communicable diseases from 1905 on until 1911, when again the measles curves again exceed the grippal curves for the reason mentioned.

I am on record that the control of respiratory diseases will control all of our problems of infections that we of the Public Health are working against. The charts are in accord for this city, as are the measures taken by me during the past four years, in comparison with our sister cities, whose curves are shown mainly for comparing what I have called the preventograms. Is there any practical application for you as health officers, irrespective of the size of your community? There is, and it is this—any frequency of respiratory disease should be investigated by you as to the one ill and the individuals who are the contacts of that one. Grippal attacks may be the pneumococcus, varying streptococci, the meningococcus, as well as other organisms. Find from cultures of the nose or pharynx of the one ill and from the nasal discharge of the contact who has other than an ordinary cold, who is the probable carrier, what organism you are dealing with. By measures of isolation of the carrier, you may prevent illnesses in others. It is not uncommon for me to find in a house the following: An infant dead of whooping-cough and pneumonia; of several older children, one with an unusual pussy irritant nasal discharge prompts me to culture that nose. It is a Gram-positive diplococcus and, failing the laboratory facilities to prove it such, I am warranted in isolating her and curing that discharge. Again, a boy sent out of school on account of an irritating unilateral discharge, shows the same diplococcus. I find in his home a younger boy who is in bed with a bronchitis. One week later the former boy's culture shows K-L as well. Thinking this possibly a mix-up of cultures, I take another, with the same finding. One week later the attending physician sends me a culture from the nose and throat of the boy previously ill with bronchitis, with the diagnosis of nasal diphtheria. The nose culture was positive; the throat culture was negative. The boy was now a nasal carrier, made so by his brother, who had given him his first illness also.

If now you will also read into the reports which are coming out from camps, the successive crops of meningitis cases in terms of ''pharyngitis'' and ''sore throats'' of the first set, and then look for the pathologic picture in one or more of the contacts of the cases, you will find, not the one who picked up the organism from contact of the sick, but who, because he is a true carrier, made one or more sick. I have shown you that in diphtheria; it will be proven so in pneumonia. Practically, you who have no advantages of a fully-equipped laboratory for proving what organism you are dealing with,—and we are as yet in the same condition,—may obtain preventograms for your community by searching for and isolating all abnormal nasal discharges. You will get ahead of reported cases of various diseases.

Medical Progress.

PROGRESS IN GYNECOLOGY.

By Stephen Rushmore, M.D., Boston.

(Concluded from page 539.)

Myoma—Operation and Radiation.

Case[14] compares the operative with the ''radiotherapeutic treatment'' of uterine myomas. Since the effect of the gamma rays of the radium and the hard roentgen rays are about the same, radiotherapy, as a whole, may properly be compared and contrasted with operative treatment. It may be accepted that radiotherapy is successful in the treatment of certain cases of myoma of the uterus, and the question now is, What are the relative merits of radiation and operation? The operative mortality in simple cases (for which alone radiotherapy is indicated) is under one per cent. The scar following operation is now not considered of particular moment, and shock of operation is infrequent. There is some nausea and vomiting and discomfort from operation. But taking into account the length of time radiation is necessary and the at present unavoidable after-effects of radiation, which sometimes amount to physical distress for 24 hours, Case estimates that one-third of radiated patients suffer as much as the patients operated upon. The well-known immediate and late post-operative complications have a counterpart in the narrowing of the vagina, which often occurs after radiation, occasional irritation of the skin, intestinal disturbances (diarrhea and rectal tenesmus) and occasionally vesical tenesmus. In a number of cases late injuries to the skin have occurred, sometimes in the form of a malignant ulcer. As to cure, the figures are about 100% for operation, not over ninety for radiation.

A serious difficulty is in determining the presence of an uncomplicated intramural myoma. If this is the condition present there is pretty general agreement that radiation is the treatment of choice. But the error of diagnosis is large, and the impossibility of excluding malignant disease in a certain number of cases presents a definite danger.

The expense is about the same for radiation as for operation.

Case's conclusions are that ''only cases of uncomplicated intramural fibroids or cases in which operation is declined or contraindicated by serious organic disease, should be subjected to ray treatment. Possibly there are some extremely neurotic individuals for whom the rays would also be preferable. The ray treatment should not be used when time is a factor, and it cannot be used with safety in rapidly growing tumors, in fibroid complicating pregnancy, or where serious disease exists in the tubes or ovaries. The rays should never be used in any case where complete preliminary curettage with microscopic examination of the curettings is not feasible.''

Radium.

Newcomet,[15] in a review of the literature on the use of radium, gives a summary of the results in pelvic disease. Radium appears to be gaining in favor in treating cancer of the cervix uteri, and the number of symptomatic cures, while not large, is increasing. Relief of symptoms, as hemorrhage, discharge and pain, nearly always follows its use. Opinion is divided as to the advisability of operation following radiation. Following operation, radium used judiciously will do no harm, and may do good, and in the case of recurrences should always be used. The disease may symptomatically subside completely. "It must not be forgotten that there are certain individuals who do not show this favorable response to the application of radium, and not a few authors call attention to a certain number in their list who not only fail to respond, but show a decided change for the worse. The radiation of the tissue sometimes causes a more active growth of the disease; and this must be remembered where radium is to be applied to early or borderline cases."

Favorable reports of treatment of benign tumors or myomata have been made by a number of writers, and some take the advanced view that radium should be considered the method of election, and should it fail, as it will in a few, operation for removal can then be considered.

"During the past year a few cases have come under observation where malignant disease followed the removal of a fibroid tumor, and yet operation has been recommended to circumvent this very condition. Had radium been employed previous to the removal, no doubt this sequela would not have occurred." The preferred technic is to dilate the uterine canal, remove a specimen for examination, and insert tube of radium, filtered as needed, in accordance with the amount used.

He concludes that there is very little evidence that radium or any of the radioactive substances will ever be a specific in the treatment of malignant disease, but it has been proved to be a valuable asset in the treatment of individual malignant cases.

Cancer and X-Ray.

Holding[16] considers that improved cancer prognosis is justified by deep roentgen treatment. His conclusions are based on a wide experience with cases of cancer subjected to numerous forms of treatment, and studied in many instances with unusual care. He is inclined to believe, with others, that the morphology of a tumor is related to its resistance to radiation and that embryonal types of tissue are particularly susceptible. For the gynecologist it is interesting to note that Holding regards carcinoma of the uterus and squamous celled epithelioma as lesions which do not respond to x-ray or radium, or give only palliation, and adenocarcinoma of the ovary as a lesion which does respond.

Radium Therapy in Cancer.

Ewing[17] discusses some aspects of radium therapy which deserve attention. His valuable presentation is rather compact and to be appreciated must be read, but he emphasizes the need of scientific criteria in testing radium therapy, and the dangers of its use except in skilled hands. It is in the early stage of its evolution and its actual value should be determined by experts, who are fortified by a knowledge of pathology, as well as by an adequate supply of radium, and skill in the technic of its use.

Cancer of Cervix: Cautery Amputation.

Dickinson[18] advocates a revival of the Byrne cautery method for treatment of cancer of the cervix. He maintains that, for all practical purposes, cases of cancer of the cervix that are curable are curable by cautery amputation. His chief reasons for advocating the older method are its undoubted efficacy in certain cases where the growth is restricted, and the low morbidity and mortality following its use. His view is, therefore, very pessimistic with reference to what operation can accomplish. In order to get a fairer idea of the operation than from his own use of it alone, he visited the clinics, both abroad and in this country, where the extended operation was performed.

The "enlarged Byrne operation" is performed with an electric cautery, of low voltage and high amperage, with a large blade and heavy connecting cables. Good exposure is obtained by means of Schuchardt incision and relatively small retractors. "Two retractors, acting just where the operator is working, usually suffice. Big or water-cooled specula seem to me clumsy and unnecessary." All the paravaginal and paracervical tissue that can be safely removed is taken away, and the cautery incision is prolonged upward into the body of the uterus, removing a cone-shaped mass, including much, if not all, of the endometrium. If the gloved finger is placed in the rectum and the "thermometer or little finger in the bladder," a guide is furnished for deeper work. In certain cases the abdomen is opened and the uterus is held in the gloved hand of an assistant as a control.

It is important to avoid charring. "Cooking ......until the tissue is like horn" is to be desired.

At the end of the operation the cavity is packed with zinc oxide gauze, dusting the vagina and vulva with bicarbonate of soda. The gauze is to be removed only when loose, after a week or more, to avoid secondary hemorrhage. While healing is slow, as suppuration and granulation go on for many weeks, the convalescence is quick, as far as the general strength and getting up are concerned.

Sterilization of Female.

Culbertson[19] describes a new method of sterilization of the human female, which, while thorough, permits the subsequent restoration of fertility, according to his claims.

The broad ligament is punctured from in front backward an inch or so below the round ligament. By pulling up the round ligament a clear space is seen through which the puncture may be made. The fimbriated extremity of the tube is then drawn through the puncture wound and stitched to the peritoneum. The fundus is attached to the anterior abdominal wall (muscle and fascia) by two linen thread mattress sutures which emerge well below the lower end of the incision. One of these sutures on each side of the median line is sufficient. Before the mattress sutures are tied, the round ligament on each side is attached to the anterior abdominal wall from the internal ring to the mattress suture of that side, by a continuous catgut suture. On tying the mattress sutures the peritoneal cavity is divided into an upper and lower portion and the fimbriated extremities are thus completely separated from the ovaries.

The operation has been performed one hundred and twenty-five times with success, but so far no occasion has arisen for attempting restoration of fertility.

Hemorrhage from Ovary.

In the female, intraperitoneal hemorrhage from the pelvis is usually regarded as originating from an ectopic pregnancy. It is well known, however, that it may have some other source and Novak[20] reports one of these unusual cases and briefly reviews the literature.

Novak's patient was an unmarried girl of 15, with normal menstrual history, who was seized suddenly with violent pain in the right iliac fossa, nausea and vomiting. When seen eight hours later there was definite rigidity of the right rectus, pain still localized in the right iliac fossa, and the patient was pale and prostrated. Temperature 99°, pulse 120. By the time the patient could be prepared for operation shock was pronounced, pulse 138, temperature 100°. Blood examination: leucocytes 20,000 with 90% polymorphonuclears, hemoglobin 45%.

At operation the peritoneal cavity contained a large amount of blood. The left tube was normal, except for a bluish dilatation about one centimeter in diameter. The left ovary and right tube were normal, the right ovary showed a small cystic follicle, two and one-half centimeters in diameter, ruptured and containing blood clots which were also adherent to the external surface.

On account of the patient's poor condition operation was limited to suturing the right ovary, removing the left tube and closure of the abdomen. The patient's convalescence was uneventful. Careful microscopical examination of the left tube (F. P. Mall) showed tubal pregnancy, apparently of rather long standing, with no sign of recent bleeding.

About forty similar cases of hemorrhage from the ovary have been reported, some with ruptured ectopic pregnancy, but this seems to be the first noted with unruptured pregnancy.

The point of origin of the bleeding in some of these cases, at least, is the thecal vessels of structures derived from the graafian follicles. It may be from an atretic follicle, but more frequently from a corpus luteum or corpus luteum cyst.

In a number of cases, trauma seems to be a possible factor in the etiology. The principal predisposing factors are conditions which bring about hyperemia of the ovary with engorgement of its vessels, but the histories of the cases reported are too incomplete to determine the relation to menstruation.

The degree of hemorrhage is variable from "two tablespoonfuls" to "cataclysmic," as in some fatal cases.

The diagnosis generally made before operation is acute appendicitis, as in Novak's case, or ectopic pregnancy. A correct diagnosis is difficult and may be impossible.

Pharmacology of the Vagina.

Waddell[21] reports the results of a study of the "pharmacology of the vagina." The excised organs of non-pregnant nulliparous and multiparous animals were used for experiment of dogs, cats, rabbits, rats, guinea pigs, cows, sheep and hogs. The drugs employed were epinephrine, nicotine, arecoline, physostigmine, pilocarpine, atropine, scopolamine, ergot, hydrastis, ergotoxine, morphine, cocaine, pituitary extract and barium chloride. They were examined with reference to their effects on both the longitudinal and the transverse sections of the vaginae of one or all of the above mentioned species.

He finds that spontaneous rhythmic contractions are exhibited by both the circular and longitudinal musculatures of the excised vaginae, when suspended in oxygenated Tyrode's solution at body temperature. The application of drugs produces on the circular musculature the same response as on the longitudinal. There are numerous other interesting findings, the practical value of which is not yet clear, but it is especially interesting to note that the excised vagina of the non-pregnant animal reacts to drugs in most cases like the uterus of its species.

Tissue Tone.

Huggins[22] calls attention to the fact that there is at present no way of determining what he calls the "horse power" of the patient to be subjected to operation. Independent of somewhat obvious contra-indications to operation, such as damaged kidneys or lungs, and marked cardiac disease, there is a condition which is characterized by poor tone throughout the entire muscular system, including the heart, which is most difficult to measure. Careful study suggests a flabby heart. If this condition of flabbiness seems present throughout the body it is of great prognostic importance. The condition may best be described as one of chronic fatigue, and the strain of a major operation may be more than the patient can stand.

Many causes operate to bring on this condition of reduced vitality which is an important factor often overlooked. Suitable rest and building up of the patient perhaps for several weeks before operation may make the difference between recovery and death to the patient.

Determination of the presence of this reduced vitality may tax the diagnostic skill of the surgeon. The reaction of the heart to graduated exercise, as indicated by the change in pulse pressure, Huggins considers a valuable indication. If exercise diminishes the pulse pressure markedly, operation is unsafe or distinctly contraindicated. A functional kidney test should not be neglected and the electrocardiogram may reveal suspected disease.

There is another danger signal for the gynecologist to which Huggins calls attention. It is the occurrence of loss of tissue tone and flabby heart muscle with prolapse of the uterus, a coincidence which Huggins now regards as ominous. It is particularly true when the prolapse develops suddenly, the patient seeking relief a few weeks from its onset. The predisposing factors following the trauma of childbirth have been present for years, but suddenly, for no well defined reason, the uterus becomes prolapsed to the second or third degree.

Huggins reports three deaths following operation for relief of uterine prolapse. In the first the clinical diagnosis of the cause of death was weakness of the muscular structure of the heart, and of the intestines as well. In the second, it was paralytic ileus. In the third, about two weeks after operation, the patient began to complain of some shortness of breath and dyspnea when talking. After several days the patient died suddenly without any aggravation of these symptoms. There were no necropsy reports.

Huggins' paper is a plea for a more careful study of the patient's general condition before undertaking a major operation, and an attempt to improve the condition by rest and general building up. If the patient does not respond to this treatment the advisability of operation becomes doubtful, at least.

Pulmonary Fat Embolism.

Bissell's[23] study of fat embolism as a cause of postoperative death is a valuable contribution. His conclusions are as follows: (1) Deaths clinically supposed to be due to surgical shock are due, in so far as this experience goes, to pulmonary fat embolism and its attendant blood pressure phenomena. (2) Pulmonary fat embolism causes a lowering of arterial blood pressure and an elevation of venous blood pressure, which may be sufficient to cause death. (3) Intravenous infusions are contraindicated because of the increased pressure on the right heart.

(4) By simple methods pulmonary fat embolism is easily demonstrated at necropsy.

In eight months six instances of fatal postoperative fat embolism were observed in the necropsy service of the Mayo Clinic. Three followed breast amputation, one ventral herniotomy, one craniotomy for brain tumor, and one laminectomy for spinal cord tumor. Three of these cases, herniotomy and two breast amputations, are reported in detail. The microphotographs give striking pictures of extensive accumulation of fat in the lungs. While the sub-title of the paper, "a frequent cause of postoperative death," should be regarded as an opinion rather than as a conclusion legitimately drawn from the evidence submitted, the evidence does show that perhaps fat embolism in the obese or following operations in fatty tissue with considerable trauma is a very serious danger, for it sometimes causes death. The susceptibility of the obese to shock has long been recognized, and Bissell has shown the anatomical basis for clinical manifestations so well described years ago by Roswell Park. Park's conclusions are worthy of repetition now. He said:

"1. Fat embolism in varying degrees of severity is not an uncommon complication of surgical accidents and operations.

"2. It may be so mild as to be lost sight of in the general condition of shock, or, perhaps, more properly speaking, it is one factor of a condition of prolonged shock.

"3. Our knowledge of the subject will be greatly increased when we appreciate the possibilities of its occurrence and observe our cases more closely, watching for the appearance of fat in the urine, or slight dyspnea, etc.

"4. When prostration and loss of blood have been great, a moderate amount of embolic disturbance of this kind may serve to turn the scales against a patient who would have otherwise recovered.

"5. By a proper understanding of this subject, certain deaths may be explained which otherwise seem inexplicable.

"6. Treatment can be only symptomatic, but may accomplish something.

"7. Autopsies should be so conducted as to reveal this condition when present."

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* * *

Book Reviews.

Pocket Formulary. By E. Quin Thornton, M.D. Eleventh edition. Revised. Philadelphia and New York: Lea and Febiger. 1918.

This is the eleventh edition of a most useful formulary, which has been revised in accordance with recently developed knowledge of the value of salvarsan, human blood serum, antimeningitis serum, curative sera of all kinds, bacterial vaccines, etc. The work is not a mere collection of prescriptions. There has been an earnest endeavor to summarize the best therapeutic knowledge of the day, excluding no drug on account of its age, and including none by reason of its novelty. The text has been arranged in the most convenient fashion possible. Diseases are arranged alphabetically, and under each are given what are believed to be the most efficacious prescriptions for simple cases as well as for the various stages and complications. A valuable feature of the work is found in the annotations as to the use of each formula.

Lectures on Medicine—A Handbook for Nurses. By Chalmers Watson, M.D., F.R.C.P.E. New York: William Wood and Company. 1918.

This book consists of a series of clinical lectures for nurses, written by the Lecturer on Clinical Medicine of Edinburgh University. An attempt has been made to present an epitome of the principles and practice of medicine in a form appropriate to nurses. The purpose of the book is to increase the nurse's medical knowledge so that she may be able to render as much assistance as possible to the physician in the investigation of the less known diseases, and to secure her intelligent and effective coöperation in the management and care of her patients. The major disorders of the human system are analyzed, symptoms described, illustrative examples given, and general treatment outlined. A chapter is devoted to dietation for various kinds of diseases, and a collection of sick-room recipes given.

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MEDICAL RESERVE CORPS.

The following self-explanatory letter has been received from Surgeon-General Gorgas:

War Department,
Office of the Surgeon-General,
Washington, April 8, 1918.

"1. I wish to call to the attention of the profession at large the urgent need of additional medical officers. As the war progresses the need for additional officers becomes each day more and more apparent. Although the medical profession of the country has responded as has no other profession, future response must be greater and greater. The Department has almost reached the limit of medical officers available for assignment.

2. I am, therefore, appealing to you to bring to the attention of the profession at large the necessity for additional volunteers. So far the United States has been involved only in the preparatory phase of this war. We are now about to enter upon the active, or the fighting phase,—a phase which will make enormous demands upon the resources of the country. The conservation of these resources, especially that of man-power, depends entirely upon an adequate medical service. The morning papers publish a statement that by the end of the year a million and a half of men will be in France. Fifteen thousand medical officers will be required for that army alone. There are today on active duty 15,174 officers of the Medical Reserve Corps.

3. Within the next two or three months the second draft will be made, to be followed by other drafts, each of which will require its proportionate number of medical officers. There are at this time on the available list of the Reserve Corps, an insufficient number of officers to meet the demands of this draft.

4. I cannot emphasize too strongly the supreme demand for medical officers. Will you give the Department your assistance in obtaining these officers? It is not now a question of a few hundred medical men volunteering for service, but it is a question of the mobilization of the profession, that in the large centers of population and at other convenient points, as well as at all Army camps and cantonments, boards of officers have been convened for the purpose of examining candidates for commission in the Medical Reserve Corps of the Army. An applicant for the Reserve should apply to the board nearest his home.

5. The requirements for commission in the Medical Reserve Corps are that the applicant be a male citizen of the United States, a graduate of a reputable school of medicine, authorized to confer the degree of M.D., between the ages of 22 and 55 years, and professionally, morally and physically qualified for service.

W. C. Gorgas.
Surgeon-General, U. S. Army."

In conjunction with the appeal from Major Simpson, published in last week's issue of the Journal, the importance of this communication from General Gorgas is obvious. The seriousness of the present war-crisis in Europe makes it imperative to hasten the dispatch of troops, and the raising of further draft armies, from this country. This means more medical officers urgently needed in the Army and the Navy at home and abroad. The time has come when every physician, within the age-limits, should, if humanly practicable, offer himself for service to his country in whatever professional capacity he can be most expediently employed.

ANNUAL REPORT OF THE CANCER COMMISSION OF HARVARD UNIVERSITY.

The fifth annual report of the Collis P. Huntington Memorial Hospital and the Cancer Commission of Harvard University has been submitted for the year ending June 30, 1917. Since the Commission first decided to expand its work from that made possible by the Croft bequest to a larger field of usefulness, it has obtained funds which have enabled it to build and conduct a hospital of twenty-five beds for a period of about five years, and to establish a plant which now represents a valuation of about six hundred thousand dollars, and involves an annual expenditure of nearly fifty thousand dollars. With these funds it has been enabled, not only to support the hospital, but to conduct investigations into the origin and treatment of cancer. For this purpose the Commission has organized a hospital staff, consisting of experts in the care and treatment of the disease. It has also brought together a group of scientific investigators engaged in research into the problems which the progress of the work brings forward from time to time for solution.

The most recent activities of the Commission have been concerned with the problems which the discovery of radium and other forms and applications of light rays have brought into prominence. Under the supervision of Prof. William Duane, there has been conducted for the past five years a systematic study of the action of light rays upon cancer, and their incidental effects upon normal tissues. Professor Duane's work has been chiefly concerned in the perfection of a method of obtaining the "emanation" from radium in a pure state, and preparing it in a form serviceable for therapeutic purposes. Dr. W. T. Bovie's research work on the action of rays of light upon the living cell in a state of active division has a most important bearing upon the underlying conditions of cancer and growth in general.

The Commission has suffered from the loss of active workers, who have been called into the service of a country at war. Many valuable investigations have been curtailed for this reason.

The amount of radium in the possession of the Commission has more than doubled during the past year, and now amounts to one gram, representing a value of about one hundred thousand dollars.

The expansion of the work of the Commission has shown the importance of the construction of a new building or annex to the Hospital, specially designed for this original work. The Hospital itself has a constantly increasing service, and the large number of out-patients calls for additional accommodations. Designs are being prepared for an addition, where the valuable radium plant, a new x-ray machine, and specialized chemical laboratories can be suitably housed.

During the year plans have been made to supply the State of Massachusetts with what is called a Free Diagnosis Service. One of the difficulties in obtaining accurate statistics of cancer is due to the frequent lack of accurate pathological investigation of the supposed cancer tissue. A microscopic examination by a competent authority is often wanting. The Commission has, therefore, planned to supply this service for the physicians and hospitals of Massachusetts, to whom it is not otherwise available. Such aid from the Commission cannot fail to be of great practical value to the State in favoring the early recognition and the effective treatment of cancer. Too much stress cannot be laid upon the importance of the fact that it is in its early stages that cancer is a curable disease.

The work of the Commission has shown during the past year that a slow but steady progress is being made towards the solution of the proper method of treating cancer. No panacea has yet been discovered, but a backward glance gives ample evidence that much has been accomplished. In the more superficial forms of the disease, such as are seen so frequently on the face, many cures are effected by radium, and in some of the internal forms of malignant disease the results of radiotherapy are encouraging.

METHODS FOR FIELD STUDY OF INDUSTRIAL FATIGUE.

From the Public Health Report for March 15, 1918, comes an interesting statement concerning industrial fatigue investigation. Field investigation into industrial fatigue means investigation carried out in the factory itself, where fatigue is produced by ordinary work, as contrasted with experiments carried on in the laboratory, where fatigue is produced artificially. These field investigations fall into two classes,—investigations which measure ordinary natural fatigue by means of artificial "tests," such as tests of reaction time or tests of sense acuity, and investigations which measure fatigue by the ordinary events of industrial life, such as output (quantity and quality), accidents, power consumption, sickness, labor turnover. The most usual measure to take is that of quantity of output, wherever this does not depend exclusively on the speed of the machine. The data of the investigator are here either found ready for him in factory records kept for purposes of checking wages or measuring efficiency, or the investigator may observe and record the industrial processes himself.

The test of the "hourly output curve" is a new and successful method of testing fatigue. The output of a certain number of machines is observed from one to seven days each, and the output for each hour (8 to 9, 9 to 10, etc.), added up in a total, 10 working hours being compared. Fatigue consists in a diminution of activity that is itself caused by activity. As activity proceeds activity falls, and the theory is that a comparison of the output of consecutive hours will show exactly to what extent the unrelaxed tension of activity will result in fatigue toward the end of a spell and toward the end of the working day, and exactly how far rest pauses, meal intervals, and a night's sleep will allow human capacity to gain recovery.

There are several advantages of the hourly output test. The record of the output is usually easy to secure every hour. Foremen often keep it for their own benefit in estimating at any given time how the day's work is progressing. Often there are automatic registers on machines which record the hourly output. The output curve can be accompanied by curves in other very significant events of factory life, as accidents and the consumption of power. The evidence of fatigue cannot be judged from the number of accidents and the amount of electrical power consumed except by hourly curves. By comparison of the curve of output with the curves of accident and power consumption, measured by hours, a very accurate gauge of fatigue in the factory may be obtained. The hourly curve brings out the subtle distinction between the fatiguing effect of different types of work and possibly of different types of conditions also. It has been demonstrated that monotonous work—work requiring attention and work involving muscular strain—might yield curves of different shapes.

There is one disadvantage of the hourly curve method. It does not make clear just what conditions are wrong. If an output or power consumption curve should fall or an accident curve rise steeply, conditions are obviously wrong, but what conditions may lead to better results is not directly indicated by the figures. If a sufficient number of observations are made, however, comparisons between factories are made possible. If the output curve in one factory drops heavily as the work increases in length, while in another factory on the same operation the output curve continues steadily, then we may conclude that the latter factory has so arranged its hours and conditions of work that the workers do not suffer from undue fatigue at the end of their day.

THE PRESENT SMALLPOX SITUATION.

The Monthly Bulletin of the Health Department of Boston for February states that smallpox has been very prevalent in the United States this season. Comparatively few cases have been discovered in Massachusetts, but a widespread epidemic has prevailed in Maine. Several cases were discovered in Boston early in December. They occurred in well-to-do individuals, and exposed a large number of people to the danger of infection before the nature of the disease was recognized. Every agency at the command of the Health Department was promptly employed to locate exposed persons, vaccinate them, and keep them under observation, but it was impossible to locate them all. All the cases had traveled extensively about the city while in a contagious stage of the disease, and had exposed other persons to infection in street cars, restaurants, and barber shops. Investigation showed that these cases of smallpox must have been contracted in Boston or vicinity from other cases of smallpox which were never discovered. A few more cases of smallpox have since been discovered in or about Boston, all but one of which were attributable to infection from undiscovered local cases. The one exception occurred in an individual who had been kept under supervision of the Health Department after known exposure to another case.

The Health Department wishes to make public the danger from smallpox. Persons who have not been vaccinated within seven years are advised to be vaccinated. Over 50,000 persons have already been vaccinated, including especially the class of people among whom cases of smallpox have occurred, the well-to-do, those whose business takes them into other States, and those whose occupations bring them into close contact with persons coming into the city from elsewhere, employees of transportation companies, hotels, department stores and other large corporations. This vaccination may have helped Boston to avoid the outbreak of a serious epidemic of smallpox during the winter. Physicians have been on the lookout for symptoms of smallpox, and actual cases of the disease have been promptly recognized and treated. The prevalence of smallpox in other parts of the country presents a danger to Boston which is not to be disregarded. Everyone familiar with conditions in Boston knows that the city is ripe for a serious smallpox epidemic, even though it may be escaped this year. Boston has an unusually large unvaccinated population. The last outbreak occurred in 1901-02, when there were 1528 cases reported, with 190 deaths. Whether Boston is going to see a repetition of one of these epidemics will depend upon the people themselves, upon the extent of their willingness as individuals to adopt well-recognized measures for personal self-protection.

The highest number of cases of smallpox officially reported in the United States from October 1, 1917, to January 20, 1918, occurred in the following states:

Ohio	2755
Nebraska	1974
Indiana	1722
Michigan	1672
Kansas	1370
Iowa	1140

The fewest cases were reported in the following States:

Massachusetts	12
Vermont	9
Connecticut	6
Nevada	2

THIRD ANNUAL REPORT OF THE FORSYTH DENTAL INFIRMARY.

The Third Annual Report of the Forsyth Dental Infirmary for Children was presented in January, 1918. This Infirmary was founded in 1910, and aims to educate parents, teachers, nurses, and children in the hygienic value of healthy mouths, and to furnish instruction as to the best methods of securing the same; to prevent dental caries by oral prophylaxis and by the care and preservation of the temporary teeth; to investigate the causes and to study the prevention of oral diseases and caries of the teeth; to remedy, so far as possible, existing conditions of dental caries and other oral diseases; to establish and promulgate a higher standard of dental asepsis; to furnish for the dental profession an opportunity for charitable work and for the educative experience of a large clinic.

In accordance with these aims, the Infirmary has pursued its work, and reports that in 1917 a larger number of patients have been cared for than ever before, this being due largely to the coöperation of all members of the Infirmary staff. School nurses have also helped very much in bringing to the Infirmary various groups of children in need of dental care. At the request of schools and societies, lectures have been given to parents, children and others in regard to the work of the Infirmary and the importance of caring for the teeth of young children.

There have been about one thousand visitors at the Infirmary throughout the year, many of whom remained several days to study methods of operating and treating the children. Several have operated for ten days or more in the Infirmary clinics.

With the declaration of war, a letter was sent to President Wilson, offering to the Government the use of the Infirmary with its facilities and equipment. The President replied, expressing his cordial thanks, and saying that he was bringing the offer to the attention of the Secretary of War.

Following this response of the President, action was taken to organize the staff to operate at the Infirmary in case it should be accepted as a base hospital for the treatment of face and jaw injuries. This staff is under the direction of a general surgeon as chief, and represents a complete unit dealing with plastic surgery, bone grafting, treatment of fractured jaws, making of special appliances, oral and dental surgery, and contemplates the installation of three to five hundred beds, with the requisite number of assistants, nurses, etc.

Three one-week courses were organized the latter part of May at the Infirmary to fit dentists for service in the Dental Officers' Reserve Corps; about six hundred dentists were registered for these courses, with daily session from 9 a.m. to 7 p.m. Dr. Harold DeWitt Cross, the Director of the Infirmary, was appointed Preliminary Dental Examiner for the D.R.C., and after the courses were completed, physical and professional examination for appointments in the corps were held at the Infirmary, over three hundred dentists being examined.

Much emphasis has been laid on the desirability of treating children of a very young age to obtain the full benefit of preventive dentistry. It has been the policy of the Infirmary to encourage the attendance of very young children, with the object of increasing preventive rather than reparative work. The result has been that the number of such children receiving oral treatment is exceeded by no other institution in the world. The plan has been adopted of requiring that the majority of the cases coming to the Infirmary should not be more than eight years of age, for the wisdom of the policy of giving attention to the children prior to the destruction of their six-year molars and of eliminating very badly involved teeth has been fully demonstrated.

SCHOOL OF INSTRUCTION ON PUBLIC HEALTH.

The program for the Convocation and School of Instruction on Public Health, to be given by the Committee on Public Health of the Massachusetts Medical Society, is nearing completion. It is expected that special sessions will be devoted to such topics as water, sewage, public health laboratory methods, public health reports, specific diseases, industrial hygiene, child welfare and public health administration. The program for Thursday, May 30, will include an address by Past Assistant Surgeon A. J. Lanza of the U. S. Public Health Service. Dr. Lanza has been the officer in charge of the investigation of industrial sanitation. The Public Health Service is coöperating with the Committee on Public Health in arranging for this School, and it is through the courtesy of Surgeon-General Rupert Blue that Dr. Lanza's presence is made possible.

On the evening of May 30, an illustrated lecture on "Public Health Education in China" will be given by Dr. W. W. Peter, whose work in China was described in such flattering terms in the February issue of *World's Work*. Dr. Peter has been in charge of public health education in China for some years. For the past year he has been studying public health methods in this country, and expects to return to Shanghai in August. The lecture will be held at the new Technology Buildings. Ladies are invited, and during the social hour which is to follow the lecture there will be an opportunity to meet Dr. and Mrs. Peter.

MEDICAL NOTES.

London Death Rates in 1917.—Statistics recently published show that the total death rate of London during the year 1917 was only 14.7 per thousand inhabitants living. Among the several districts and boroughs, the highest annual rate was 19.5 in Shoreditch, a crowded East Side slum, and the lowest was 10.9, in the financial and business region of the city.

Annual Report of the New Jersey State Hospital.—The forty-second annual report of the New Jersey State Hospital for the Insane, at Morris Plains, N. J., has been submitted for the period from November 1, 1916, to October 31, 1917, and the needs of the institution for the coming year therein set forth. The hospital has suffered seriously from overcrowding during the past year, having 2685 patients in residence at the close of the year, with a normal capacity of about 1650, and with every reason to expect the usual annual increase in population. In order to treat and care for the insane successfully, it is necessary to house them in such a manner as best to promote their restoration to health, and to make those in whom recovery is impossible comfortable, and this is out of the question where overcrowding exists. The year, from a financial standpoint, has been a strenuous one, presenting problems of great perplexity. All commodities of necessity and up-keep have soared in cost, with no relaxation in the demands for feeding and clothing, and supplying the necessary facilities indispensable to the proper conduct of the hospital. It has been impossible to command sufficient officers, nurses and attendants and such help as is needed in the various divisions of the medical and business departments to protect properly the cardinal necessities of the institution. The nursing corps has been sadly deficient, almost continuously threatening the safety of the sick, while the medical staff lacks five members to make it complete and in reasonable working order.

WAR NOTES.

Promotions in the Medical Reserve Corps.—Eleven captains in the Medical Reserve Corps have been promoted to be majors. They are: Capt. Edward C. Green, Cambridge, 301st Engineers; Capt. Charles A. Barron, Philadelphia, 301st Field Hospital; Capt. Robert J. Carpenter, North Adams, 301st Ambulance Company; Capt. T. H. Dexter, Brookline, 303d Field Hospital; Capt. W. J. Collins, Northampton, 304th Field Hospital; Capt. H. A. Lamphear, Fitchburg, 304th Infantry; Capt. D. M. Unger, New York, Depot Brigade; Capt. B. M. Cort, Springfield, 302d Ambulance Company; Capt. C. T. Congdon, Nashua, Depot Brigade; Capt. John J. Murphy, Cambridge, 302d Infantry; Capt. James J. Powers, Manchester, N. H., 302d Infantry.

A New Review on War Surgery.—There has just been prepared in the Office of the Surgeon-General a new pamphlet Review of War Surgery and Medicine (March, 1918, Vol. i, No. 1). According to the editorial note, this review is to appear monthly and to be devoted to abstracts of war medical literature. This little pamphlet will furnish the medical personnel of the Army abstracts of original papers of importance, necessary information in a short compass, and prompt publication of reports which otherwise might not gain circulation.

In this first volume there is an excellent review of Surgery in the Zone of Advance, prepared from data written by Major George de Tarnowsky, based upon his personal observations in the French army front. It is the best description that has yet appeared in American literature of the war.

This is followed by a very readable and instructive review of the most recent data on gas gangrene, trench foot and the general principles guiding the treatment of wounds of war.

Copies of this review may be obtained by addressing the Superintendent of Documents, Government Printing Office, Washington, D. C., enclosing ten cents in stamps.

This review should be in the hands of every officer of the Medical Corps and should be of interest to the entire medical profession not in the service. The reviews are very well written and make most interesting and profitable reading.

The Good Samaritan Function of the Medical Corps.—Major George de Tarnowsky, M.O.R.C. (*Review of Surgery and Medicine*, March, 1918, Vol. i, No. 1, prepared in the office of the Surgeon-General) gives one of the best descriptions of the surgery in the zone of advance, from personal observations on the French front. Attention of all medical officers is directed to the following:

"In addition to hot meals which are carried to the soldiers in the trenches, the Medical Corps now sends hot tea, flavored with a small amount of brandy, to the front lines twice daily—a most welcome potion, which the soldiers look forward to with eagerness. The prevailing idea of the French Medical Corps is to make the fighting men feel and know that their comfort is being looked after and that everything is being done to mitigate the hardships under which they live. The French are strong believers in the personal element—the little acts of kindness, even of tenderness, towards the individual soldier which have helped to keep up both his fighting spirit and his mental serenity. The 'tisaneries,' as the hot tea stations are called, did not come into existence as the result of army orders; they represent a voluntary contribution to the soldier on the part of the Medical Corps. Begun in a small way, it was soon noticed that, where the *tisaneries* existed and the regimental kitchens were installed near enough to the trenches so that the food reached the soldier hot, the morale and fighting edge were of the finest."

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending April 13, 1918, the number of deaths reported was 268, against 268 last year, with a rate of 17.82, against 18.09 last year. There were 41 deaths under one year of age, against 45 last year.

The number of cases of principal reportable diseases were: diphtheria, 70; scarlet fever, 24;

measles, 321; whooping cough, 43; typhoid fever, 3; tuberculosis, 60.

Included in the above were the following cases of non-residents: diphtheria, 21; scarlet fever, 4; measles, 6; whooping cough, 3; typhoid fever, 1; tuberculosis, 5.

Total deaths from these diseases were: diphtheria, 7; measles, 6; whooping cough, 5; tuberculosis, 34.

Included in the above were the following non-residents: diphtheria, 2; measles, 2; tuberculosis, 2.

Annual Report of the Boston Association for the Relief and Control of Tuberculosis.—The fourteenth annual report of the Boston Association for the Relief and Control of Tuberculosis for 1917 contains the following information concerning the work for the past year. The Association has been much affected by the war, especially by the fact that the Secretary has been granted leave of absence to take up the work of the Boston Committee on Training Camp Activities. The active work of the Association in educating the public through the Park Shows has been discontinued, as was the work of the Healthgram Committee throughout the summer. The Prendergast Camp has continued doing good work, caring for those who are on the waiting list for some sanatorium, and caring for those who have been discharged from the state sanatoria and cannot find elsewhere the opportunity to continue regular rules for living. The work of the Committee on Health in Industry has been most encouraging, and report is made that the attitude of many manufacturers, which was at first doubtful or actively hostile, has changed to one of interest and even coöperation. Boston, as well as the State at large, has had an increase both in its number of deaths throughout the year and also in the actual number of reported deaths grom tuberculosis. The increase is probably due to greater truth in diagnosis and a better system of reporting. Reports made after investigation by the Boston Department of Health show that there are practically no neglected cases of tuberculosis in the community. At the Mattapan Hospital the Association has attempted to make a start in providing entertainment for the patients. It is extremely necessary that tuberculosis hospitals should furnish a certain amount of recreation to the people who are there. One cannot realize the lonesomeness and depression, even desperation, that must come to people who are obliged to spend weeks and months in an institution with its small opportunities for recreation and change of thought. One does not wonder that patients often become discontented and unhappy, and anything that can be done to relieve the monotony of their existence will do much to make the institution popular with the masses. It behooves anyone at all interested in the subject of tuberculosis to do something to help the hospitals by sending fruits, flowers, magazines,—or, best of all, making some personal visitation.

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The Massachusetts Medical Society.

NOTES FROM THE DISTRICT SOCIETIES.

District Correspondents.

Berkshire, A. P. Merrill, M.D., Pittsfield.
Bristol North, Arthur R. Crandell, M.D., Taunton.
Bristol South, Edwin D. Gardner, M.D., New Bedford.
Essex North, T. N. Stone, M.D., Haverhill.
Essex South, H. P. Bennett, M.D., Lynn.
Hampden, Laurence D. Chapin, M.D., Springfield.
Hampshire, E. E. Thomas, M.D., Northampton.
Middlesex South, William C. Hanson, M.D., Belmont.
Norfolk South, Daniel B. Reardon, M.D., Quincy.
Plymouth, Alfred C. Smith, M.D., Brockton.

Middlesex South District Medical Society.—At a special meeting of the Middlesex South District, on March 22, 1918, the following recommendations submitted by the Committee on War Relief were adopted:

First, That a War Relief Committee, consisting of the president, secretary and treasurer, be established, whose duty it shall be to raise, manage and distribute a fund for the relief of those enlisted members and their dependents that may need such aid during the war.

Second, Such fund is to be raised by voluntary contributions of the profession and the public in such manner as may be determined by the Committee.

Third, Each member of the Society shall be notified of the existence and object of this War Relief Committee. It is to be hoped that the members will call the attention of the Committee to any person or persons who, in their judgment, may need such assistance as is intended in this act.

Committees have been appointed for each district of the Middlesex South Society, and all members will be given the privilege of subscribing to the fund in the near future.

The Society voted, in the interest of economy, to omit the annual dinner this year.

Our secretary, Dr. Lyman S. Hapgood, has enlisted for the duration of the war with Dr. Lund's unit which is now stationed at a base hospital at Camp Wheeler, Macon, Georgia.

William C. Hanson,
District Correspondent.

Miscellany.

SUGGESTIONS FOR STATE BOARD OF HEALTH REGULATIONS.

Approved by the Surgeon-General of U. S. Army, Navy, and Public Health Service.

(To be published shortly in P. H. S. *Weekly Reports.*)

Regulations of the . . . State Board of Health for the prevention of venereal diseases. (Adopted . . . 19. .)

Venereal Diseases Declared Dangerous to the Public Health.

Syphilis, gonorrhea and chancroid, hereinafter designated venereal diseases, are hereby declared to be contagious, infectious, communicable, and dangerous to the public health.

Rule 1. Venereal Diseases to be Reported.

Any physician or other person who makes a diagnosis in, or treats, a case of syphilis, gonorrhea or chancroid, and every superintendent or manager of a hospital, dispensary, or charitable or penal institution, in which there is a case of venereal disease, shall report such case immediately in writing to the local health officer, stating the name and address or the office number, age, sex, color, and occupation of the diseased person, and the date of onset of the disease, and the probable source of the infection, provided that the name and address of the diseased person need not be stated except as hereinafter specifically required. The report shall be enclosed in a sealed envelope and sent to the local health officer, who shall report weekly* on the prescribed form to the State Board of Health, all cases reported to him.

Rule 2. Patients to be Given Information.

It shall be the duty of every physician and of every other person who examines, or treats a person having syphilis, gonorrhea, or chancroid, to instruct him in measures for preventing the spread of such disease, and of the necessity for treatment until cured, and to hand him a copy of the circular of information obtainable for this purpose from the State Board of Health.

Rule 3. Investigation of Cases.

All city, county, and other local health officers shall use every available means to ascertain the existence of, and to investigate, all cases of syphilis, gonorrhea and chancroid within their several territorial jurisdictions, and to ascertain the sources of such infections. Local health officers are hereby empowered and directed to make such examinations of persons reasonably suspected of having syphilis, gonorrhea or chancroid, as may be necessary for carrying out these regulations. Owing to the prevalence of such diseases among prostitutes and persons associated with them, all such persons are to be considered within the above class.

Rule 4. Protection of Others from Infection by Venereally Diseased Persons.

Upon receipt of a report of a case of venereal disease, it shall be the duty of the local health officer to institute measures for the protection of other persons from infection by such venereally diseased person.

(*a*) Local health officers are authorized and directed to quarantine persons who have, or are reasonably suspected of having, syphilis, gonorrhea, or chancroid, whenever in the opinion of said local health officer, or the State Board of Health, or its secretary, quarantine is necessary for the protection of the public health. In establishing quarantine the health officer shall designate, and define the limits of, the area in which the person known to have, or reasonably suspected of having, syphilis, gonorrhea, or chancroid, and his immediate attendant, are to be quarantined, and no persons, other than the attending physicians, shall enter or leave the area of quarantine without the permission of the local health officer.

No one but the local health officer shall terminate said quarantine, and this shall not be done until the diseased person has become non-infectious, as determined by the local health officer or his authorized deputy through the clinical examination and all necessary laboratory tests, or until permission has been given him so to do by the State Board of Health or its secretary.

(*b*) The local health officer shall inform all persons who are about to be released from quarantine for venereal disease, in case they are not cured, what further treatment should be taken to complete their cure. Any person not cured, before release from quarantine, shall be required to sign the following statement after the blank spaces have been filled to the satisfaction of the health officer:

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* Substitute period required for other communicable diseases.

I, . . . , residing at . . . ; hereby acknowledge the fact that I am at this time infected with . . . ; and agree to place myself under the medical care of . . . (name of physician or clinic), . . . (address) within . . . hours, and that I will remain under treatment of said physician or clinic until released by the health officer of . . . or until my case is transferred with the approval of said health officer to another regularly licensed physician or an approved clinic.

I hereby agree to report to the health officer within four days after beginning treatment as above agreed, and will bring with me a statement from the above physician or clinic of the medical treatment applied in my case, and thereafter will report as often as may be demanded of me by the health officer.

I agree, further, that I will take all precautions recommended by the health officer to prevent the spread of the above disease to other persons, and that I will not perform any act which would expose other persons to the above disease.

I agree, until finally released by the health officer, to notify him of any change of address and to obtain his consent before moving my abode outside his jurisdiction.

(Signature.)
(Date.)

All persons signing the above agreement shall observe its provisions, and any failure to do so shall be a violation of these regulations. All such agreements shall be filed with the health officer and kept inaccessible to the public as provided in Rule 10.

Rule 5. Conditions under Which the Name of a Patient is Required to be Reported.

(*a*) When a person applies to a physician or other person for the diagnosis or treatment of syphilis, gonorrhea, or chancroid, it shall be the duty of the physician or person so consulted to inquire of, and ascertain from, the person seeking such diagnosis or treatment, whether such person has theretofore consulted with, or has been treated by, any other physician or person, and if so, to ascertain the name and address of the physician or person last consulted. It shall be the duty of the applicant for diagnosis or treatment to furnish this information, and a refusal to do so, or a falsification of the name and address of such physician or person consulted by such applicant shall be deemed a violation of these regulations. It shall be the duty of the physician or other person whom the applicant consults to notify the physician or other person last consulted of the change of advisers. Should the physician or person previously consulted fail to receive such notice within ten days after the last date upon which the patient was instructed by him to appear, it shall be the duty of such physician or person to report to the local health officer the name and address of such venereally diseased person.

(*b*) If an attending physician or other person knows, or has good reason to suspect that a person having syphilis, gonorrhea, or chancroid is so conducting himself or herself as to expose other persons to infection, or is about so to conduct himself or herself, he shall notify the local health officer of the name and address of the diseased person and the essential facts in the case.

Rule 6. Druggists Forbidden to Prescribe for Venereal Diseases.

No druggist or other person not a physician licensed under the laws of the State shall prescribe or recommend to any person any drugs, medicines, or other substances to be used for the cure or alleviation of gonorrhea, syphilis, or chancroid, or shall compound any drugs or medicines for said purpose from any written formula or order not written for the person for whom the drugs or medicines are compounded and not signed by a physician licensed under the laws of the State.

Rule 7. Spread of Venereal Disease Unlawful.

It shall be a violation of these regulations for any infected person knowingly to expose another person to infection with any of the said venereal diseases, or for any person to perform an act which exposes another person to infection with venereal disease.

Rule 8. Prostitution to be Repressed.

Prostitution is hereby declared to be a prolific source of syphilis, gonorrhea, and chancroid, and the repression of prostitution is declared to be a public health measure. All local and state health officers are, therefore, directed to coöperate with the proper officials whose duty it is to enforce laws directed against prostitution, and otherwise to use every proper means for the repression of prostitution.

Rule 9. Giving Certificates of Freedom from Venereal Diseases Prohibited.

Physicians, health officers, and all other persons are prohibited from issuing certificates of freedom from venereal disease, provided this rule shall not prevent the issuance of necessary statements of freedom from infectious diseases written in such form, or given under such safeguards, that their use in solicitation for sexual intercourse would be impossible.

Rule 10. Records to be Secret.

All information and reports concerning persons infected with venereal diseases shall be inaccessible to the public except in so far as publicity may attend the performance of the duties imposed by these regulations and by the laws of the State.

Note 1. A rule providing penalties for violation of these regulations should be added if penalties are not specified by statute. It is thought preferable that the statute should prescribe a penalty for violation of regulations of the State Board of Health. In any case the state law should be examined to make sure that it either prescribes penalties or gives the State Board of Health power to do so. The statutes should also give the State Board of Health the powers suggested by the following wording: "The State Board of Health shall have power to make such regulations concerning venereal diseases, including the reporting thereof and quarantine of infected persons, as it may from time to time deem advisable."

Note 2. It is recommended that provision for intensive treatment in suitable hospitals while patients are under quarantine shall be made by the municipalities, counties, or the State, at public expense, and that adequate hospitals and clinic facilities of high standards shall be made available to voluntary and compulsory patients.

Note 3. For the enforcement of these regulations it is recommended that States establish Bureaus or Divisions of Venereal Diseases under their State Boards of Health and appropriate the necessary funds.

Note 4. The issuance of arsphenamine or equivalents to health officers, institutions, and physicians at state expense, under suitable restrictions, is a valuable measure for preventing syphilis.

Note 5. Provision should be made for the examination of prisoners for venereal diseases and their treatment. If they are still infectious when their prison terms have expired, they should be quarantined and treated until they can be released with safety to public health.

Note 6. Laboratory tests for syphilis and gonorrhea should be made for physicians by the laboratories of the State Board of Health and the health departments of large cities.

Note 7. Due provision should be made for follow-up work and social service in connection with the prevention of venereal diseases.

Note 8. Institutions are needed for the segregation of persons who are, or are almost certain to become, venereal disease carriers and who cannot be adequately controlled in any other way.

SOCIETY NOTICE.

Massachusetts Society of Examining Physicians.—Meeting April 26, 1918, Copley Plaza Hotel.

1. Dr. Charles H. Lawrence of the Robert Brigham Hospital, "Methods of Heart Examination and Their Values."

2. Dudley Holman, of the United States Mutual Life Insurance Co., "Conservation of Man Power by Accident Prevention."

Dinner at 6.30 p.m. Meeting at 8 p.m.

James H. Stevens, M.D., *Secretary.*

MUNICIPAL CIVIL SERVICE COMMISSION, NEW YORK.

The Municipal Civil Service Commission has announced three important medical examinations for which applications will be received at room 1400, Municipal Building, Manhattan. Applicants must be citizens of the United States and residents of the State of New York.

Assistant Medical Examiner.—The duties of this position include making investigations of violent and suspicious deaths and to perform autopsies in connection with such investigations. Candidates must be licensed to practice medicine in the State of New York; must also produce evidence of having performed, in an official capacity, two years' work in a pathological laboratory of a recognized school, hospital, asylum or public morgue; and of having performed autopsies. The examination will consist of the following subjects: Experience, 4; written paper, 3, practical test, 3. There are two vacancies in the office of the Chief Medical Examiner of the City of New York. Applicants must be at least 25 years of age. The position pays a salary of $3000 per year. Applications received until May 1, 1918, at 4 p.m.

Deputy Medical Superintendent, Grades 3 and 4.—The duties are to perform such details of supervisory work in the management and control of a large hospital or a group of hospitals as may be assigned by the Medical Superintendent, or to act as Superintendent of a small hospital. Requirements: Candidates must be licensed to practice medicine in the State of New York; they must be graduates of a medical college offering a course of study approved by the New York State Department of Education and have completed an interneship in a hospital of recognized standing, or other equivalent hospital experience. The examination will consist of the following subjects: Experience, 4; technical, 4; oral, 2. There are two vacancies in the Department of Charities, at a salary of $2520 per annum, with maintenance, at Sea View Hospital (exclusively for tuberculosis) and at Cumberland Street Hospital. The salary of Grade 3 is from $1800 to, but not including, $2400; and Grade 4 from $2400 to, but not including, $3000. Applications received at room 1400 until April 29 at 4 p.m.

Pathologist.—The duties are to exercise independent judgment in and to be responsible for pathological examinations and to perform research work under supervision. Requirements: Candidates must be at least 21 years of age and possess a medical degree granted on the completion of a standard course of instruction in a medical school of recognized standing.

CENSORS' EXAMINATIONS.

The Censors of the Suffolk District Medical Society will meet to examine candidates for admission to The Massachusetts Medical Society, at 8 The Fenway, on Thursday, May 2, 1918, at 4 p.m.

Candidates, who must be residents of the Suffolk District or non-residents of Massachusetts, should make personal application to the Secretary and *present their medical diplomas*, at least one week before the examination.

For further particulars, apply from 2 to 5 p.m. to 99 Commonwealth Avenue. Gilbert Smith, *Secretary.*

The Censors of the Worcester District Medical Society will meet for examination of candidates for fellowship, Thursday, May 2, 1918, at 4 p.m., in the Reference Department, Worcester Public Library. Candidates should make application to the undersigned a week before that date.

Ernest L. Hunt, *Secretary.*

The Censors of the Essex South District will meet at the new Salem Hospital Thursday, May 2, 3.30 p.m., for the examination of candidates for admission to the Society. All members throughout the District are requested to bring this notice to the attention of non-members, who can obtain further information from the secretary.

H. P. Bennett, M.D., *Secretary.*

The Boston Medical and Surgical Journal

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RANDOM REMARKS ON TUBERCULOSIS.*

By John B. Hawes, 2nd, M.D., Boston,

Assistant in Medicine, Harvard Medical School; Assistant Visiting Physician, Massachusetts General Hospital; Secretary, Massachusetts Trustees of Hospitals for Consumptives.

In fighting any such insidious and chronic disease as tuberculosis, it is important, once in a while, to take account of stock, in order to find out exactly where we stand as to the progress we are making, if any. It is for this purpose that the Framingham experiment is being carried on. The National Tuberculosis Association is trying to demonstrate at Framingham, by the use of every known modern health measure, exactly how much such measures will accomplish. This experiment is being watched with the greatest of interest by all of us engaged in tuberculosis and health work.

For the past fifteen years, I have been intimately associated with the tuberculosis campaign, both as a private physician and as a public health officer. In my private practice I am meeting with countless tragedies, so that I often feel discouraged over the outlook, but when I see the progress that Massachusetts has made during the past few years, I feel that after all we are really making progress.

In 1907, for instance, the death rate for tuberculosis per 100,000 was over 150; in 1917 it was 119. Ten years ago, there was one state sanatorium, with 350 beds, and practically no other beds available except in a few private institutions. In 1917 there were over 3,000 beds, with at least a thousand more to be available in the near future. In 1907, with the exception of a few large out-patient departments, where only very mediocre work was done, there were practically no public health or tuberculosis dispensaries. At the present time there is a tuberculosis dispensary in every city or town of over 10,000 inhabitants in this State. So it is evident that we are making progress.

The Effect of Public Health Measures on the Private Physician and his Practice.—I have been interested in trying to find out the effect of all this state activity in tuberculosis on the private physician and his work. How much does it affect us as general practitioners? Does the good that it does outweigh any possible harm or injury to our practice?

I asked these questions of a large number of general practitioners in Massachusetts. One hundred and seventy-one replied that this had no effect; seventy-eight replied that it helped them in their work; while in no case did any physician say that it did any harm. I also inquired as to the effect of the tuberculosis dispensary on the practice of the private physician. To this question, one hundred and forty-three stated that the dispensary had no effect; seventy-one that it helped them in their practice; five that it did them harm. I cannot see how such a dispensary can do harm, and I can easily see how it can do much good if properly utilized. I note with interest that in one case it is called a "public health dispensary" rather than a "tuberculosis dispensary." I feel that the leaving out of the rather ugly name "tuberculosis" is a distinct advantage.

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* Read at a meeting of the Brockton Medical Society, March 14, 1918.

After all, whether a dispensary does or does not do good depends almost entirely upon the qualifications of the nurse in charge. If the nurse in charge of the dispensary—and none such is worthy of the name without a nurse—is well trained and tactful and enthusiastic, a tuberculosis dispensary will be of distinct value to every physician in his private practice, not only for the patients whom he sends direct to the dispensary, but also in helping out in the supervision of patients who continue to consult him privately. Particularly in the smaller cities, the tuberculosis dispensary fills an important position, and should receive the support and encouragement of the entire medical profession of the community.

The Policy of Massachusetts in Regard to Tuberculosis.—It has been said at the State House by certain persons not acquainted with facts, that Massachusetts has no definite policy according to which it does its anti-tuberculosis work. Nothing could be further from the truth. Massachusetts has a very definite policy to which it has adhered faithfully during the past ten or fifteen years. When our county tuberculosis hospitals are completed, this State expects to have in operation a system for handling tuberculosis which will compare favorably with that of any other State in this country.

According to this plan, which I hope soon to see realized, physicians in their private practice or in the tuberculosis dispensaries, will be depended upon to discover the cases of tuberculosis and to make the diagnosis as early as possible. Incipient and favorable cases will be referred to our state sanatoria. Not only Rutland, which has long been reserved for this class of patients, but also North Reading, Lakeville, and Westfield will be reserved primarily for patients in the favorable stages of the disease. In the large cities, local tuberculosis hospitals will continue to occupy the position that they do now, for patients with far advanced and progressive disease, who should be near their family, home, and friends, for emergency cases and for those awaiting admission to our state sanatoria or elsewhere. I hope and believe that the waiting list for our state sanatoria, now distressingly long, will be so short that every physician making application for a patient will be able to obtain admission for him within a reasonable period.

The county tuberculosis hospitals will fill the gap that now exists between the sanatorium and the local tuberculosis hospital. Emergency cases, and all patients from the scattered agricultural communities and from the smaller towns and villages will be cared for in these county institutions. Early and favorable cases needing treatment at once can here be looked after while awaiting admission to a state sanatorium. Patients concerning whose eligibility for Rutland or elsewhere there is some doubt can here be placed on trial and kept under observation until they can demonstrate, by the improvement they make, their right to enter a state sanatorium. I hope that at each one of these county institutions, as now exists at our four sanatoria, out-patient departments and dispensaries will be established, where doctors can send their patients from miles around for observation and advice, and where ex-patients can return for supervision as often as necessary. I likewise hope that some provision for children will be made at these county hospitals, so that there will not be the long delay that now exists before a child can be admitted to Westfield to get the treatment and schooling of which he is so urgently in need. Every physician should realize that these new county hospitals are not to be isolated institutions, but that they are part of a definite and carefully thought out plan according to which Massachusetts expects to handle its tuberculosis problem efficiently and well.

There are many physicians who criticize our present plan of action, or who say we have no definite plan. There are likewise many who criticize our existing institutions, and who doubtless will criticize the county hospitals now in the process of construction. In asking nearly 250 physicians whether or not they used the state sanatoria, and if not, why not, I received a variety of replies. Of those who answered this question definitely, 71 stated that they used the sanatoria for all of their patients that could be admitted; 17 used them occasionally; 20 used them very little, and 8 said they never sent their patients to a state sanatorium. Some gave as their reason for not advising sanatorium treatment that the waiting list was so long that both patient and physician get discouraged. To this I have no answer, except to deplore the fact, and to hope that the county hospitals will lessen the strain and relieve the situation.

Not a few doctors stated that the food was bad. To this I would at once reply that I would urge any doctor who feels this way to go to the nearest state sanatorium and sample the food for himself, or to find out more details and more facts concerning it before accepting such a statement from his patient.

A few doctors complained that discrimination was used in the admission of patients. I can simply reply to this that every patient is admitted from the central office at the State House; that the Board of Trustees, of which I am secretary, has entire charge of the admitting of patients, and that during the ten years that this Board has been in existence, at no time has discrimination been used. The medical profession must bear in mind that the only information we have to act on concerning these patients is that given on the application blank, and that no matter how accurately this may be filled out it cannot give an accurate mental picture of the patient himself, and his exact condition. For instance, when a doctor makes application for a patient in the advanced stages of the disease who he nevertheless feels is suitable for sanatorium treatment, notwithstanding the fact that he knows, or should know, that we do not accept advanced cases, he should write a note to that effect. If he would do this, describing the patient's condition and stating that although the signs in his lungs are extensive and he must therefore be classified as advanced, his condition on the whole is very good and that he is up and around every day and not a bed case, etc., an exception would be made in his case. Such information as this is seldom given; were this done more frequently, it would save much trouble and do away with considerable undeserved criticism of our method of admitting patients to our sanatoria.

There are a few instances—and I am glad to note a very few—where doctors have persistently made application for patients, classifying them as incipient, although the patient was in the advanced stages. This, if it happens once or twice, can be condoned. If, however, it happens as a rule, it is necessary either to refuse to accept the applications from such a physician, or to have his report confirmed from another source. I should like to have it definitely understood, however, that there is no discrimination used at this office; that the patient or the doctor who knows no one at the State House receives exactly as fair and just treatment as the patient who knows innumerable Senators and Representatives; that the patient's name is placed upon the waiting list in the order of the filing of the application; that I am acting under definite instructions not to admit far advanced and progressive cases to our sanatoria, and that no one regrets the length of our waiting list and the consequent delay in admission more than I.

The Diagnosis of Pulmonary Tuberculosis.—There is very little new to be said on this subject. While there is no doubt that the medical profession in Massachusetts ranks high in its ability to diagnose tuberculosis in its early stages, there is still room for vast improvement. I am meeting with two types of mistakes: First, there is the group of patients in whose lungs the signs are vague and indistinct and who are therefore assured by their physicians that they have no pulmonary disease, despite the fact that the constitutional signs and symptoms, such as loss of weight and strength, fever, rapid pulse, etc., demonstrate only too clearly that the patient is sick, and, in all probability, sick with tuberculosis. Next, there is a large group of patients with acute and sub-acute pulmonary infections, usually at the base of the lung, of pneumococcus or streptococcus origin, that have been so prevalent during the past year, whom physicians, generally the younger and more enthusiastic ones, who are on the hunt for tuberculosis, are diagnosing as consumptives. I would urge, therefore, as I have many times before, that every physician remember that thoroughness and common sense on his part are the chief factors in the correct diagnosis of tuberculosis; that facts obtained from the history of the patient and constitutional signs and symptoms are of more importance than local signs in the lungs, and, finally, that in many cases the diagnosis cannot be made at once, but that only after careful study can we arrive at the truth, and finally that it is unnecessary, unwise, and unjust to tell the patient that he is a consumptive until we know that we are telling him the truth.

Home versus Sanatorium Treatment of Tuberculosis.—Prior to the construction of our newer sanatoria at North Reading, Lakeville, and Westfield, and the various local tuberculosis hospitals, home treatment was practically the only kind of treatment of consumption that was available for the vast majority of patients in this state. There was nearly ten thousand consumptives in need of active institutional treatment, and only four or five hundred beds.

Dr. Joseph H. Pratt, of Boston, has shown us what home treatment really is, and what it can accomplish. I have spoken on this subject in practically all the cities and many of the towns of this state during this period ten or fifteen years ago when so few beds were available, urging home treatment, according to the methods outlined by Dr. Pratt, and describing how it could be done. This did not mean then, nor does it mean now, that I would use home treatment as a substitute for sanatorium treatment except in the rarest of instances.

In numerous articles, Dr. Pratt has tried to prove that home treatment is more efficient and more economical than sanatorium treatment. He has based his conclusions on two or three hundred cases that have been in his class under his own personal supervision. I do not feel that he has made it sufficiently clear that, although his patients are not selected according to the stage of the disease, they are selected in a far more important sense of the word, in that no one is admitted to his class who is not willing and able to carry out treatment according to his directions and to attend to every minute detail for as long as Dr. Pratt deems it necessary. This means a grade of intelligence and faithfulness on the part of the patient which we cannot demand in our state work, where we deal with patients by the thousands and not in small groups, and where over 50% are of foreign parentage and of a very low grade of mentality. Could the work of Dr. Pratt, including his own boundless enthusiasm and energy, and his willingness to give all the necessary time to this work, be endlessly multiplied, along with a wealthy church to provide certain necessary funds, I have no doubt that home treatment might play a vastly more important part in our anti-tuberculosis campaign than it does at present in Massachusetts. This is manifestly impossible, however. Of 250 doctors answering the question as to whether they preferred home treatment as a substitute for sanatorium treatment, 179 said emphatically "No;" 26, "Yes;" while over 50 qualified their remarks by stating that they preferred home treatment in certain cases where there was sufficient intelligence, and where the financial situation made it possible.

At a recent meeting of the City of London Medical Society, this subject of home *versus* sanatorium treatment was considered by eminent authorities. The consensus of opinion was very definite that sanatorium treatment, followed by efficient after-care, was by all means the best and most efficient weapon we have in handling our consumptive patients in particular and the tuberculosis campaign in general.

Personally, I am firmly convinced that practically every tuberculous patient at some time or other should have the training that sanatorium treatment alone can give, and that home treatment should be carried on only after the patient has had such training.

The Present Status of Tuberculin and Artificial Pneumothorax in Treatment.—I use tuberculin in the treatment of pulmonary tuberculosis little if any. I firmly believe that it has its place, and that Dr. Trudeau during his lifetime demonstrated that patients with pulmonary disease who had been through a course of tuberculin treatment had fewer relapses than those who had not had such treatment. Tuberculin, however, is a very potent agent for harm as well as for good, and I do not believe that it should be given unless the patient is under absolute supervision in a hospital, sanatorium, or its equivalent. The majority of my patients who can afford to do so, I send to Saranac Lake, and I leave the question of tuberculin entirely to the physician in charge. I do not believe that the average general practitioner should use tuberculin either in diagnosis or treatment of pulmonary tuberculosis. The question of tuberculin in non-pulmonary disease is an entirely different one, but too large a subject to be discussed here. Briefly, my position as regards its use in non-pulmonary tuberculosis is to be sure that it does no harm. In many cases I know that it does good.

Concerning artificial pneumothorax in pulmonary cases, my feeling is very much the same as it is in regard to the use of tuberculin. I have never used this method, nor do I intend to use it until I have a sanatorium of my own, where my patients can be under absolute and constant supervision. Here, again, when I send a patient to Saranac Lake or to one of our state sanatoria, I leave the question of the use of artificial pneumothorax entirely in the hands of the doctor to whom I refer the case. While I do agree that in certain hemorrhage cases and in certain others that have come to a standstill by other methods of treatment, collapsing the lung may do a great deal of good, I do not feel at all sure that the good is permanent, or that its advantages outweigh its possible dangers. I do not feel that a physician, no matter how expert, is justified in the use of this method of treatment where his patients are not under absolute supervision at a sanatorium or hospital all the time, and I cannot help but feel that a considerable part of the improvement which has been attributed to the use of nitrogen gas in collapsing the lung is due to the fact that the patient realizes the necessity of absolute rest to an extent he has not realized before.

Heliotherapy.—I know of no more striking advance in the treatment of tuberculosis than in the use of sunlight, or heliotherapy. It is true that our New England climate lends itself little, if any, to this method, but nevertheless it has proved of distinct value in New England and in other eastern states. At Buffalo and Staten Island, N. Y., Providence, R. I., and here in Boston this method has been used with success. While its greatest sphere of usefulness is in non-pulmonary disease, particularly in bone and joint cases, it may well be introduced as an adjunct to the hygienic open air treatment of pulmonary tuberculosis. It is essential to remember, however, that sunlight is a powerful agent, and can do harm as well as good. I would advise every physician who considers using this method of treatment to make a careful study of the work that has already been done and to read both the original articles of Rollier, who first called attention to it, and the work of others in this country on the subject.

Outdoor Sleeping and Outdoor Schools.—While it is farthest from my thoughts to let it appear for a minute that I am not a strong believer in fresh air and in cold air in the treatment of tuberculosis in adults and in children, I do feel that in certain cases we are over-emphasizing the value of cold air and are forgetting that air to be fresh and stimulating need not be at zero temperature.

Dr. Henry D. Chadwick, superintendent of the Westfield State Sanatorium, has under his charge over one hundred and fifty children of fourteen years and under, who attend an open-air school at his institution. He has come to the definite conclusion that the temperature of such a school should not go below thirty or thirty-five degrees. He believes that extreme cold, just as extreme heat, saps the vitality of a child and works for harm rather than for good.

While I firmly believe that there should be more open-air schools and rooms than there are now, and that our present policy of waiting until a child becomes anemic, run down, and in generally poor condition before we give him the fresh air of which he is so urgently in need is a poor policy, on the other hand, it is not necessary or wise to go to extremes in this matter. We must use judgment and common sense in dealing out our fresh air, just as we do our exercise and rest. I have seen numerous children this winter who, I believe, have been harmed rather than helped by enthusiastic parents and teachers who have insisted that they remain out-of-doors in zero weather. The fact that the child says that he feels perfectly warm and comfortable is not good evidence on which to decide such a matter as this.

To a less degree the same applies to adults. One of my patients at Saranac Lake recently told me that he was sleeping out-of-doors at a temperature of fifty degrees below zero. Apparently it agreed with him, but I do not believe that it was with the entire consent and approval of his physician. Perhaps he was the exception who proved the rule.

Outdoor sleeping for eight months of the year would be beneficial for every one of us and for our patients, but I do not feel that it is always entirely beneficial for the remaining four months.

Rest and Exercise.—I am glad to note that the value of rest in the treatment of tuberculous conditions is being emphasized in the literature of today on this subject. I am meeting with fewer and fewer patients who have been told by their physicians to go to the mountains, and to live on a farm, and to lead a healthy open-air life with plenty of exercise.

There is probably no factor which is so important in the successful treatment of a case of tuberculosis as rest. One great difficulty in this matter, however, is that the majority of patients and their friends, and indeed many physicians, have little idea as to what "absolute rest" really means. I have seen patients who told me that they were absolutely at rest, while the same patient was getting out of bed, walking to and from the bath-room, sitting upright in a chair, and in other ways using up strength and energy which he might have saved. I have seen physicians allow a patient to cough ceaselessly night and day, instead of giving him a sedative of some kind to check this cough, or trying to concentrate the coughing spells and the raising of sputum into a few definite periods.

Absolute rest, in my opinion, means that the patient is not allowed to feed himself, that all unnecessary movements are forbidden, and that codeia, or some other drug, is used to prevent coughing and to promote sleep, and finally that visitors are rarely allowed. Physical and mental rest are both essentials in the treatment of tuberculosis.

The Value of X-ray in Diagnosis.—I am glad to note that the physicians in Boston specializing in the x-ray have a very conservative attitude in regard to its value in the early diagnosis of tuberculosis. In other cities, x-ray evidence is far too often rated higher than that obtained from a careful clinical examination of the patient.

I believe that x-ray evidence is of great value but that it should always be subsidiary to a careful and painstaking examination of the patient, his lungs, his history, and particularly the constitutional signs and symptoms.

MEDICAL COMPETENCE AND HOSPITAL EFFICIENCY.*

BY FRANCIS D. DONOGHUE, M.D., BOSTON,

Medical Adviser of the Massachusetts Industrial Accident Board.

COMPETENT medical services must be the mainspring of proper compensation.

At the risk of repeating, perhaps, some things that I have said before, I will endeavor to speak on hospital efficiency and medical competence. Many people might suggest that it would be better to speak of medical incompetence and hospital inefficiency, but we should take the bright side of the shield and as much efficiency as we have on the side of the shield toward us, and not look for gloom. Perhaps in the beginning, a consideration of the medical aspects of workmen's compensation law from the standpoint of a medical adviser may be timely.

In the first place, it is inconceivable to my mind how a Board administering an accident or injury law can get along without medical advice. I know that men can acquire wisdom. I know that men have acquired great wisdom, but to know medicine and its application to the things of industry without a technical training is absolutely impossible.

In the beginning of the law, we had as little medicine in our law as most states. The Board, in case of a dispute, could pick its impartial examiners. It could pass upon the reasonableness of physicians' fees; it could pass upon the adequacy of hospital treatment—all after the results were attained. The time the Board should have control—should have its finger in the pie—is before the results are attained, especially the bad results.

Not having any provision in the law, it is advisable to take the advice of a very distinguished (one of the few distinguished) Republican of the State of Texas, who once said, "What are we here for?" We are here to get out of the law all that is in it for the *injured workman,* and in getting out all that is in it for the workman, we get out all that is in it for the employer of labor and the best for the community. If it be a poor law, a good commission ought to stretch it to the cracking point. If it be a good law with a poor commission, it will have a poor result just the same. The application of common sense to the law is a necessary and desirable thing, and the commissioners and laws, which are burdened with legal precedents and the decisions of the House of Lords, will not accomplish nearly as much for the rehabilitation of the injured worker as the commission which has in mind that merely paying the man money is never adequate compensation, and that he is only properly compensated when he is restored to his proper place in the community.

In the absence of any direct prohibition in the law, we should go the limit in cure and rehabilitation. In Massachusetts, in the absence of such a law, giving the Accident Board power, we have endeavored to build up, through a system of impartial examinations and by a study of hospital results in cases which come before the Board, a procedure which led first to examinations of cases by experts in the particular thing which the man claimed as his disability, and secondarily to treatment. It would manifestly be a joke to refer an arthritic spine or an obscure back injury to a general practitioner whose treatment consists of sympathy and liniments. Our impartial examiners examined on the basis of not only was the man still disabled when the case arrived, but had the case been properly treated before it arrived, had it been properly diagnosed before it arrived, and if still disabled, could it be cured. The proof of the pudding was the eating, and our men, our impartial examiners, began to make good on what they said could and should be done, and the insurance companies gladly stood for it.

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* Read at the Fourth Annual Meeting of the International Association of Industrial Accident Boards and Commissions, at Boston, August 22, 1917.

With the increasing payments for medical and hospital expenses and compensation, the agents of some insurance companies are prone to seize upon some helpful point in diagnosis or treatment to "blackhand" an injured employee with a legitimate claim. Because a man is suffering from an ununited fracture received in his employment, and a Wassermann is suggested, which may even be positive, that should not be a reason for intimidation, or worse—misrepresentation as to his rights.

The objection to impartials being paid by the insurance companies for the treatment of cases, under an agreement between all parties at a conference, is to my mind overbalanced by the positive good that comes from the rehabilitation of the man and his restoration to his place as a productive member of the community.

The various forms under which the Compensation Act is administered make it necessary for you to take the principles and apply them as best you can in the various places. The medical profession as a whole did not in the beginning grasp the importance of the movement which was instituted. Men here and there picked out the essence of the law and endeavored to put it into effect.

Medical competence:—can it be obtained through a free choice of physicians or can it be obtained under competent specialists' work?

In accident work you heard the results of Dr. Clark this afternoon. If we had enough Dr. Clarks to go around, the problem would be solved, but we must take and we must utilize the instruments and institutions we have in hand because there is not enough money or enough time to furnish immediately what we actually need. The older men do not make the effort to grasp the salient points that are necessary in the treatment and rehabilitation of the workman or in the settlement of his claim. The work of the middle group—the family doctor, so called—who meet their patients face to face, is limited, but they can do most of the ordinary accident work if you consider that of the number of cases with which we have to deal, the trivial are the great percentage of cases. There should be some direct method by which the general man, who is a good, honest, conscientious man, could be supplied with the things he needs to remedy his deficiency. In other words, there should be trained consultants available under some form of administration, and there should be institutions for diagnosis and for checking up results. Those are essential with that type of man, and perhaps, with all men.

Shall we duplicate hospitals by having the insurance company or employers of labor again taxed for other institutions?

As has been pointed out by Dr. Codman, there is already in Massachusetts two hundred million dollars invested in plants for the purpose of cure. In addition to this investment, there is thirty odd millions a year appropriated or given for the treatment of the sick. Is that two hundred million properly handled? Is that thirty or thirty-six millions properly expended? Who knows; and is there any way to check it up before we duplicate these institutions, and spend another twenty or thirty million in trying to arrive at perfection?

Again this leads to the interesting question, should charitable funds be used for industrial workers, who carry insurance supposed to pay for medical treatment and care?

The small hospital, of course, has lack of equipment. It has a narrow staff, as a rule. They don't let anybody in and they resist anybody with an idea.

We had a case in the Accident Board, in which a man had been treated in a hospital and, in general, the diagnosis was made that he had an operative condition in connection with a Charcot joint. I sent an impartial examiner to Fall River to see the man, and our impartial examiner said that the man could be remedied by a brace of a simple character applied to the leg, and that it was not a "Charcot." The impartial examiner was called upon to make good; he made a brace, and the man was relieved largely of his symptoms and got about on his feet, but the day after the hearing at which that was determined, the social service worker of that hospital went to the man and said that he must come in for an operation or he could not come to the hospital at all for any purpose; and that was a hospital that was supplied by the insurance company. Here was a case in which competent medical authority decided he could be cured, the Board said he could be cured, and the hospital said, "You must be operated or you don't get any treatment of any kind."

Small hospitals and general hospitals also have a disadvantage in that the men who have been treated by private practitioners, who are obliged to go into the hospital, are given not only the once over, but the once, twice and three times over. Whatever has been done for them, to the mind of the interne, has been wrong, and between what the man was told by his attending physician and by what is known as the "pup" in the hospital, his mind is somewhat upset, and he doesn't know whether he is going or coming for treatment.

Shall we permit, or have we got to permit that, and for how long? Injured workmen do fall down between the general practitioner and the hospital which will not give us adequate treatment.

Then there are a few large hospitals, and in this State they are good. They will be better and will do better work as times goes on—when the workman is taken into confidence more, and explanations made to him of the whys and wherefores of the treatment; and when he is urged to go back to work he will feel that he is not being urged to go back to work from a selfish standpoint, without regard to his own physical welfare. Dr. Clark has suggested that men go back to work, but under medical supervision; that a man should be provided to whom the injured man may turn with his trials and tribulations, who will explain to him the meaning of the things that may happen to him after he returns; display a little human interest, and if the company hospitals do that, as they do in Worcester and in Lynn, and as they do in some measure in Boston, the old feeling that the employer is an enemy of the workman, will disappear, and coöperation will result.

A study of hospital results showed that hospitals are distinctly undermanned in practically every instance. In one of the largest hospitals in the Commonwealth, through the action of the Board by pressure, but without law, that hospital reduced the number of beds to each visiting surgeon from ninety-two to fifty, and fifty beds to a man giving part time is altogether too many, in my opinion, even today The people who know most about hospitals have very little to say about them. The person who should know most about hospital needs and the efficiency of the hospital is the doctor, and the doctor is seldom a member of the trustees, and if he is a member, he is very often more concerned with other things than hospital efficiency.

In the program today, you were given a visit to the Massachusetts General Hospital, one of our largest and oldest institutions. You saw many things there. You saw a great plant. There is little in that famous Zander room, so impressive to you and me, which cannot be duplicated for small cost. The principle involved in every one of those motions can be made with a discarded bicycle, an old ladder, a few strips of plaster, a wheel tied onto the wall, an old rocking horse, etc., if you have somebody to put brains into it. The finest institution is not a substitute for medical competence, and you people who come from places where it is difficult to get these expensive equipments need not be discouraged, because these can be duplicated at very small cost,—almost no cost. The blacksmith shop, which you seldom think of in connection with a hospital, is a rare thing in a hospital, and most doctors who prescribe braces and mechanical things seldom take the trouble to go into the blacksmith shop, and very often they do not know if these appliances are properly made, but kick if a brace is inefficient. You further saw the place where the orthopedic men went into the blacksmith shop brace-making department and learned how to fit braces.

The low-back question is one which everybody has difficulty with, and the question arose this afternoon about a heart case. The question often arises about a back case, and sometimes it is difficult to decide whether a condition is an accident or an injury. Massachusetts has a personal injury law, and that personal injury law means any injury which arises out of the employment. It has been construed liberally, and an "old back," especially when an employee has arthritis or old-fashioned rheumatism, that back when it is strained—and it may be strained by a very trivial happening—is an extremely difficult thing to cure unless adequate medical attention is given. Most of these cases, in my experience, except with some people from warm climates, during cold months, can be cured at a very much less cost than the cost of a hearing before the Accident Board, by braces and supportive measures, bearing in mind the patient's food, régime, and method of living. Here must be taught the need for selecting the kinds of foods and the elimination of food in addition to local measures. The time may come when in industrial centers hospitals will be provided for technical industrial cases. I do not believe that this is necessary today. I believe that the thing that is more necessary, as indicated this afternoon, and which I indicated last year at Columbus, is that it would be a time and money-saving thing if a man with a low compensation rate, with a family depending upon him, should be taken out and put on an industrial farm and allowed to work out his troubles to a greater degree of comfort, rather than to have the insurance company pay him money indefinitely, surrounded by conditions that obtain in certain parts of our great cities.

The next thing that I have in mind on the question of hospital efficiency is the rehabilitation of workmen, which has taken on a new significance. If we had a proper system in this country of workmen's compensation administration in all the States there would not now be the feverish effort to provide reconstruction hospitals for the wounded that are to come. Dr. Patterson this afternoon told that we had just as many wounded every day in the United States as will probably be in Europe, and we have no adequate centralized system of taking care of these men. The Massachusetts Legislature authorized investigation of how to rehabilitate the injured workmen, and it was turned over to the State Board of Education. They reported a bill to the Legislature calling for $15,000 for social service workers, but no doctor and no nurse. I think that speaks for itself.

I was in California last week and I called on Mr. Pillsbury the chairman of the California Commission, who started right by being born in New Hampshire, and he told me that in California they found there were hospitals and hospitals, and he at the last Legislature indicated a few of his ideas along this line, working for a change in the law. "There have been hospitals that were hospitals in name only, but in fact were mere bunk houses, rough and insanitary and inconvenient, and with a medical staff that consisted either of some youth who had just got his 'shingle' or some old broken-down practitioner who had not gotten anywhere. With the hope of putting an end to this condition, the Legislature, in Section 10 of the new Act, gave the Commission power to inspect and determine the adequacy of hospitals and hospital facilities supplied by employers, or by mutual associations of employees for the treatment of injuries coming within the provisions of the Act. Every hospital supplied by employers or mutual associations of employees must make reports from time to time to the Commission, on demand, giving account of their receipts and disbursements and services rendered to or for employees, and if, in the judgment of the Commission, the service or equipment of any such hospital is inadequate to meet the reasonable requirements of medical treatment contemplated by the Act, the Commission may, after notice and an opportunity to be heard, declare such facilities to be inadequate, and thereafter injured employees of such employer may procure treatment elsewhere, and the reasonable cost thereof shall be a charge against such employer; but if, after finding by the Commission of a condition of inadequacy, the institution shall be put in adequate condition with an adequate medical staff, the former finding may be modified or rescinded and the hospital be reinstated in good standing.

"It is worthy of noting that no part of any contribution paid by the employees or deducted from their wages for the maintenance of such hospital facilities shall be devoted to the payment of any portion of the cost of providing compensation prescribed by the Act. It will be lawful to assess employees for sick benefits, but the employer must himself contribute enough to the fund, at least, to pay for the care of all those who are injured in his service."

That is the law of California. That ought to be the law in every State; and if, as Dr. Brickley indicated in caisson workers, we struck before the effect, everywhere the number and causes of accidents would have to be reduced.

I want to say just one word before I point out a few concrete cases. I think we should not encourage the establishment of reconstruction hospitals except in connection with some already organized institution. We have poor hospitals enough. We have undermanned hospitals enough. We have hospitals with inadequate facilities for treatment. The money that is expended for war work, if expended judiciously, and if the ground has been properly broken by the accident boards, can be expended to greater advantage along the line of perfecting the institutions we already have by providing them with proper equipment under conditions of war or peace. We have power plants, administrative buildings, wards, out-patient departments. Have you an orthopedic department in your hospital? Have you a blacksmith shop? Isn't it cheaper to pay for the establishment of an orthopedic department and a blacksmith shop than it is to go out and build a new building with underground connections?

The freedom of choice should not take in all the paths that were indicated today by Dr. Patterson. It should indicate only the path of righteousness, and accident work must be carried out by men who have something else in mind than what is in it financially. The men in Massachusetts appreciate that they owe a duty greater than the money. They have accepted reductions in fees and the hospitals have contributed their services at less than cost, to the end that the whole community might benefit from their result, because the lesson of medical efficiency that can be carried out under the Act with the opportunity to measure the time that it takes to cure will have a determining influence upon any form of social and health legislation that is to come. Until the compensation law is properly oriented, until the hospital units are properly systematized and organized, it is folly to think of the duplication of effort and utilization of millions of dollars more in health insurance without standardization. We have the way now, we have the machinery, and we know what ought to be done. The advocates of health insurance, which is bound to come in time, and ought to come in time, at this stage should work for standardizing of hospitals, the measuring of their output—not in the cost per day of milk, vegetables, and dressings, but on how many days it takes to put a man back to work.

(Dr. Donoghue then showed some slides.)

Original Articles.

RADIUM IN THE TREATMENT OF CARCINOMA OF THE BUCCAL CAVITY.*

BY ROBERT B. GREENOUGH, M.D., BOSTON.

[From the Cancer Commission of Harvard University.]

THE employment of radium in the treatment of cancer followed shortly after the discovery and description of the element by the Curies. The x-rays had already been used with more or less success in the treatment of disease of various kinds, including malignant disease, and the world was quick to appreciate the advantages of a source of radioactivity so compact and so continuous in its action as the radium salts. For weak superficial application the radium salts themselves are used, spread thin on a piece of metal and fixed with varnish. Applicators of this character, valued at from $500 to $2500, are in use in many clinics for treatment of superficial skin lesions, but are of little value in cases of carcinoma of the deeper tissues. For more powerful dosage the gaseous emanation which is constantly given off from the radium salts is used in preference to the salt itself.

Radium element is constantly undergoing disintegration, or decay, at a rate such that in seventeen hundred years a given amount of radium will be reduced one-half in quantity. This disintegration is accompanied by a discharge of particles from the atoms of radium which change their character in such a way that several different disintegration products can be recognized. Thus the first change is from radium element to radium emanation—a gaseous product which again changes rapidly to radium A, radium A to radium B, etc. The penetrating rays which are given off come from the disintegration products radium A, B and C, rather than from the radium itself or from its emanation, but as radium A, B and C are being constantly produced by the radium and are being deposited upon the tube or vessel containing the element, the radioactivity of a given quantity of radium remains almost, but not quite, a constant amount, the newly-formed deposited disintegration products nearly replacing the ones which are destroyed. The gaseous emanation, however, when removed from its source of supply, undergoes very rapid decay into radium A, B and C, and in four days is reduced about one-half in substance and in radioactivity. The life of radium A, B and C is even shorter, and the final result of this disintegration is an element similar to lead, and devoid of further radioactive function.

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* Read at a meeting of the Harriet Newell Lowell Society for Dental Research, November, 1917.

From the disintegration products, radium A, B and C, rays are given off of three different kinds: α, β and γ rays. The α and β rays are readily absorbed by tissues, and thus have little penetration, but a good deal of caustic effect. It is the β rays, especially, which are used in the weak radium applicators used for treatment of superficial skin diseases, such as keratoses, and the early and superficial cancer of the skin. The γ rays of radium are even more penetrating than the x-rays, and it is these rays which are used for deeper and more powerful applications. The γ rays are less abundant than the α and β rays, but their effects can be obtained by the employment of large amounts of radium or of emanation which has been screened by lead or platinum to cut off the α and β rays and permit only the γ rays to reach the tissues.

At the Huntington Hospital radium is used in the form of emanation or gas. This gas is derived from the one thousand milligrams of radium which have been acquired by the Cancer Commission of Harvard University. Every day the emanation which has accumulated is drawn off and purified by a method devised by Professor Duane, and sealed in capillary glass tubes for use in the hospital. These tubes of emanation deteriorate and lose half of their strength every four days, but new ones are supplied every day, so that the amount available for treatment is practically constant. With these small capillary tubes an applicator can be prepared of any desired shape or size to produce the desired effect upon the tissues to be treated.

The effect of radium rays upon tissue is one of a peculiar nature, and not yet thoroughly understood. In general, however, it may be compared to a cauterizing agent. If the dose is strong, immediate effects are noticed, but if it is weaker, the effect may be much delayed. No pain is experienced at the time of the application, but the subsequent necrosis of tissue may be accompanied by marked hyperemia and swelling of the surrounding tissues, and a painful lesion result which is very slow to heal.

It is believed by many observers that a selective action is present in radium rays, such that tumor tissue is affected unfavorably in its growth by doses which do not produce material effects upon the normal surrounding tissues. This is certainly true in some particular forms of tumor tissue, if not in all, and has been attributed to the low vitality and consequent predisposition to necrosis which tumor cells have long been recognized to possess. Other observers attribute the beneficial effects of radiotherapy upon tumor tissue to the stimulation of the surrounding connective tissue, and the resulting fibrous tissue formation which diminishes the blood supply to the tumor and tends to encapsulate it and prevent its further extension. There is reason to believe that the body tissues of themselves exhibit some such reaction as this, as a response to the stimulus of the presence of the abnormal tumor tissue, and it is not impossible that this normal reaction may be increased by radium. Whatever the process by which it is accomplished as a result of exposure to radioactivity, tumor tissue undergoes changes which may extend to the complete, and, so far as we have been able to observe, the permanent disappearance of the tumor tissue. This is, of course, the object desired in the treatment of tumors by radium. It does not occur in every case. Some kinds of tumor are far more susceptible to radium treatment than others. In general, the milder and more superficial lesions are the ones which respond most readily, such as the senile keratoses, papillomata, and other of the so-called precancerous conditions. Superficial skin cancer also is frequently amenable to successful treatment with radium, while the deeper and more serious forms of cancer are more refractory. Some of the tumors of lymphatic origin are also notably responsive to radium treatment, although the results in such cases are less lasting, and recurrence of the growth is not uncommon.

Carcinoma in and about the mouth is one of the most common and distressing forms of malignant disease, and one in which operation has yielded relatively poor results in the way of radical cure. This may be attributed partly to the technical difficulties involved in the radical removal in one piece of the primary tumor and the adjacent lymphatics, partly to the mortality which attends extensive operations in this region, and partly, as in so many other forms of cancer, to the difficulty of early positive diagnosis of the disease. Under these conditions it was hoped that radium might offer a notable improvement in the treatment of these cases. This has proved to be true only to a very limited extent, and in suitable cases radical operation still remains the most effective treatment. It is true, of course, that the prognosis varies with the situation of the tumor, and that cancer of the lip is far more favorable for radical operation than cancer of the tongue or palate. It is also true that the size of the original lesion and its rapidity of dissemination vary in different individuals, so that generalizations in regard to cancer of any organ are open to criticism, yet, in the long run, the cases of mouth cancer form one of the most discouraging groups of cases with which the surgeon has to deal.

In the twenty-eight months from April, 1912, to January, 1916, one hundred and thirty-nine cases of mouth cancer presented themselves at the Huntington Hospital. They were divided as follows:

CARCINOMA OF THE TONGUE, MOUTH, ETC.

Lip	39	(Radium 19—Improvement 8)
Palate	8	(Radium 62—Improvement 9)
Lower Jaw	36	
Upper Jaw	11	
Tongue and Floor of Mouth	33	
Tonsil	7	
Cheek (Buccal)	5	
TOTAL	139	

It is only fair to say that at the Huntington Hospital the radical operative treatment of cancer is the treatment which is advised and practised in cases in which there is a reasonable prospect of success, and radium or other palliative treatment is advised or employed only in cases which for one reason or another are not suitable for operation. Thus of the thirty-nine cases of cancer of the lip, nine were considered suitable for operation; six were operated upon at the Huntington or other hospitals, with subsequent freedom from recurrence; in two the results were unknown, and in one case operation failed to cure. Eleven cases received no treatment, and nineteen were given radium treatment. Of the nineteen cases treated by radium, four showed improvement, and four were apparently relieved of their disease, in that their tumors disappeared and no recurrence has yet made its appearance. The other eleven obtained but little benefit—these being chiefly cases in which extension to the cervical lymph glands had taken place. Squamous cell carcinoma in the lymph glands of the neck is very refractory to radium treatment, and with our present methods of treatment we can give but little hope that the progress of the disease will be materially delayed when this extension has occurred.

Eight cases of cancer of the palate, seven cases of cancer of the tonsil, and five cases of cancer of buccal mucosa were observed during this period—twenty cases in all, of which twelve had one or more radium treatments. No case showed anything more than temporary and symptomatic benefit, and the disease progressed with little or no delay toward a fatal termination. It is doubtful if radium was of material benefit in any of these cases, but in view of the fact that they offer a problem little different from that of cancer of the tongue or jaw, it is possible that larger dosage, and more aggressive radium treatment may give results in other cases, which have not been obtainable with the amount of radium available during the period covered by this report.

There were thirty-six cases of cancer of the lower jaw, and eleven cases of cancer of the antrum and upper jaw, in this series of cases Twenty-eight of the forty-seven cases had one or more radium treatments. The upper jaw cases were all refractory, and the disease was not materially influenced by radium. Six of the lower jaw cases had definite benefit from radium, however, and in one case, a local recurrence after operation, the disease was destroyed and no further recurrence has appeared in twenty months.

There were thirty-three cases of cancer of the tongue and floor of mouth; of these one was suitable for operation and there has been no recurrence in two and a half years. Twenty-two were given radium treatment, and in three definite improvement took place, although the disease was not eradicated. In these cases as in all cases of cancer of the mouth, the extension to the cervical lymphatics determines the limit of effective treatment by radium. The local lesion can be destroyed, or at least materially retarded in its growth, by active radium treatment in many cases, but when extension to the neck takes place the heavy treatments which can be used on the open ulcerated lesion in the mouth cannot be applied over the neck for fear of destruction of the skin, and its attendant complications, such as secondary hemorrhage. In cases of this character we have lately employed a combined treatment by radium and by operation. The neck dissection is done, as for a radical operation for cancer, and with the lymphatics removed and a barrier of scar tissue in their place to limit the spread of the disease, active and caustic radium treatment is applied to the local lesion in the mouth. By this method it is hoped that some cases otherwise hopeless may be given benefit, and although it is too early to report results the indications are definite that this method is one of promise for the future.

Leukoplakia-Buccalis. Eight cases of this disease occurred in this series of cases, and four were treated by radium with a certain amount of success. It is unquestionable that radium employed in sufficient strength can cause the disappearance of the milky mucosa, but only by an actual caustic action. The tissue must be burned, and as the burn is extremely sensitive the cure is attended by great discomfort, out of proportion to the severity of the disease. It is our opinion that radium treatment in leukoplakia should be reserved for the more definitely thickened and indurated areas which give indication of existing or prospective malignant transformation, and that the soft, non-infiltrated lesions can best be treated by other methods, such as fulguration.

Before closing I feel that it would be a serious neglect if I did not speak before this audience of the vital importance of early diagnosis of these lesions. The dentist far more frequently than the physician has the opportunity to observe the early changes of the buccal mucous membranes which may later develop into malignant disease.

We all admit that we do not pretend to know the actual cause of cancer, and in many organs and situations we do not even recognize any predisposing cause, or any preëxistent lesion which commonly precedes the development of cancer itself. In some parts of the body, however, there are predisposing or "precancerous" lesions, as they are called, which are so constantly, or in such large proportion, the forerunners of cancer that we can only believe that some obscure but actual causal relation exists. I refer to the lesions produced by one or another form of chronic irritation. Instances of the rôle played by chronic irritation in the incidence of cancer are all too frequent. Perhaps the Kangri cancer of Kashmir is the most striking of many examples. In this case a source of irritation unknown in other countries is provided by the custom of the natives of Kashmir of maintaining the warmth of their bodies by a small flat stove, heated with charcoal, which they wrap in their clothing and place upon the skin of the abdominal wall. In other parts of the world the skin of the abdominal wall is practically an unknown situation for cancer to arise, but in Kashmir, as a result of this practice, cancer of this region is a common disease. The so-called smoker's cancer of the lip, thought to be due to the irritation of the hot pipe stem, is another example, and the occurrence of the disease in men about six times more frequently than in women appears to justify this hypothetical relation.

In the mouth sources of chronic irritation are all too frequent: pyorrhea, ill-fitting tooth-plates or jagged teeth, which wound and keep irritated the surface of the cheek, or of the tongue, are familiar examples that arise in dental practice. Many believe, also, that tobacco is a common source of irritation to the buccal mucosa, either by chemical irritation or from the heat engendered by its consumption in smoking. Leukoplakia, that extraordinary form of chronic productive inflammation of the buccal mucous membranes, is again a well-recognized point of origin of cancer of the mouth. Further examples are hardly needed to justify the statement that it is the duty of the physician or the dentist who discovers any one of the possible "precancerous" conditions, to warn the patient of the grave possibilities of his condition, and to procure for him appropriate treatment that the lesion may be cured before the more serious disease has actually begun.

In most cases the exact time at which a lesion, such as an ulcer, a fissure, or a patch of leukoplakia *begins* to be carcinoma is impossible to define. We see many doubtful but suspicious cases, and the proper treatment of such cases offers one of the most difficult problems with which we have to deal.

The best opinion of the present day is opposed to the exploratory excision of fragments of tissue for early cancer diagnosis, on the ground that cutting into cancer tissue tends to spread the disease. This is certainly true in such forms of internal cancer as cancer of the breast; and under all circumstances it should be avoided if possible, and if any tissue is to be excised for diagnosis the whole of the lesion should be removed. As a rule, however, the diagnosis can be made by other methods, and incision can be avoided.

The existence of an open ulceration in the mouth of more than two weeks' duration, and especially if it possesses an indurated margin, raises the question of cancer. Syphilis, tuberculosis, and some rarer lesions are ordinarily to be considered in diagnosis, as well as the "precancerous" fissures, dental ulcers, and leukoplakia. If syphilis, we do not now wait for the therapeutic test, but we get a Wassermann test. Again, with syphilis, one must remember that the presence of syphilis does not exclude cancer. In fact, it favors the diagnosis of cancer, for syphilis is one of the most common antecedent facts in the history of cancer of the mouth.

Tuberculosis of the tongue and mouth is almost invariably secondary to tuberculosis elsewhere, and is also a late rather than an early manifestation of the disease.

The ulcer due to a jagged tooth or to an ill-fitting plate depends for its recognition upon the presence of such a tooth or plate. When one of the "precancerous" lesions is present and there is doubt as to whether cancer has already begun, excision of the lesion by a good margin is the procedure to be advised. Such a specimen may be examined immediately in frozen sections, by a pathologist, and if the report is positive that cancer is present, the radical operation for cancer of that situation should be done at the same sitting, and under one anesthesia.

The radical operations for cancer of the tongue, jaw and palate are serious and mutilating operations. Cures result in some of the early and favorable cases, but the best treatment will always be the prophylactic treatment which removes the causes and the results of chronic irritation before the change to malignancy has taken place. By the prophylactic treatment of these "precancerous" conditions the dentist has the opportunity to be of great service to his fellow men in preventing, or procuring early treatment for these most serious forms of malignant disease.

A STUDY OF DIPHTHERIA CARRIERS.

By D. M. Lewis, M.D., New Haven, Conn.,

Epidemiologist, Board of Health.

There are two factors which should make this subject timely: first, the unappreciated known fact that measles is followed by diphtheria; secondly, that a so-called experiment based on certain knowledge of the first factor has given rational results as well as demonstrating what should be the simplicity of control of the disease.

Having shown results from consideration of the first factor,[1] namely, lessened cases and deaths than the surrounding cities under similar conditions, during the first half of the year 1917, I was much concerned to find the months of October and November producing an increasing wave of reported cases over the previous fall. I was also impressed with the frequency of demonstrable carriers, neighborhood as well as house, in connection with the reported cases. In that I have shown that active carriers in the larger per cent. are nasal, and can be picked out definitely from ordinary head colds, I obtained the services of two trained nurses to round up every available carrier. There were two essential points: first, to make a complete survey of all of school age; and, secondly, those not of school age in neighborhoods where there had been cases but no demonstrable carrier in the house. Having picked the two nurses after a practical examination as to what could be seen by the eyes with reference to three children, one a true carrier, one an ordinary head cold, and the third a normal individual, I showed them how to take a nasal culture and set them to work. School days they went through all the grammar school grades and on Saturdays through house-to-house neighborhoods, paying attention only to noses and only to apparently definite or suspicious diphtheria noses. I have shown previously the similarity of the streptococcus nose to diphtheria, and the need for isolating these; so that, while I killed two birds with one stone, this study is based on true diphtheria. While I have no exact figures, it was estimated that approximately 35,000 children were seen by these two nurses during the two months. The important point was that there were 687 cultures taken by them. There were a few scattering instances where the diagnosis was certain, and either the child refused to allow the procedure, or where, for conserving time, the culture was taken later by me on isolating the individual. The net result was 34 nasal carriers of school age, to which there were added 23 others of school age, found either by the school nurses, physicians or teachers, or by the department in our work. Approximately .2% of our school population were carriers then, if we had all accounted for. Of 12 other demonstrated carriers found during this period. 2 were in adults and the remainder in children not of school age. There was insufficient time to more than scratch the surface of the neighborhood survey, so that any comparison with those of school age is lacking. Having previously shown the predominant age, that of ages 5 to 15, I was assured that the larger portion of the problem was solved. The other months of 1917 had yielded me 47 carriers.

Grouped by ages and sex, these 116 carriers were as follows: 12% males under age 5, with 13% females; 30 and 33%, respectively, under age 10; 5% each under age 20; while over age 20 there were 2% females.

Of these carriers, 14% were found in connection with a reported case. Of such carriers, 15% were found in the family, 20% each in other families in the house or immediate neighborhood, while 45% were non-residents, temporarily residing here but bringing their lesions with them.

Five per cent. of the total number either gave the history of, or were known previous cases of, the disease. Half of that per cent. had had cases of the disease in the family during previous years, although the carrier had not had it. A very characteristic case of such has been related in another paper.[2]

In 3 instances the carrier was one of a family living in the rear of the grocery store run by the parents. Similar contact with dry goods was shown by 2 instances. The latter number was also found with reference to rooming-houses.

In isolated instances it was possible to show that in 4 instances one carrier had made one other nasal carrier; in 8 instances one carrier had made 2 other carriers, and in a like number 1 carrier had made 3 further carriers. The multiple instances were frequent in families and explains, as I have shown, the immunity of certain families.

In 4 instances the carrier was a recent case of measles, 2 were known previous streptococcal grippes, and 1 was a convalescent whooping cough. There were 6 instances where the history was that of a similar recurring discharge or they were carried on my index as a previous carrier. The balance gave either no dependable history or merely that the onset was an ordinary head cold. In 2 instances a most remarkable finding was the following: consecutive anterior nasal cultures showed a pure streptococcus for upwards of one week, to be replaced by predominating K-L or pure cultures in one case. The other case was the reverse. There was neither time relation nor neighborhood factors in common.

In 15 instances there was patency of the nares and the discharge, as well as accompanying irritation cleared within one week after the treatment began. As contrasted with this 14% mentioned, 39% were clear only after 2 weeks, 35% under 4 weeks, while 12% lasted six weeks or over. In all cases when patency of the nares was obtained and the swab could be passed into the posterior nares, the process cleared rapidly. I have shown in another article[3] why such obstinate carriers are possible.

In no instance of this series, as in no instance of several hundred such carriers that I have observed, has any carrier developed the disease. In 2 instances only, have young physicians, fearful from perhaps both lack of experience as well as the visual picture of the condition, given antitoxin. Primary anterior nasal, so-called diphtheria, is not a disease. That the carrier so made by inoculation and one who has never had the disease, may absorb some toxin is apparent in some babies. In this series there were 2 under age 1. Both are of sufficient interest to record.

Case 1. Baby B., aged 6 months. A culture from the father walking into a physician's office showed K-L. As the patient was cultured from routine only, and not from clinical aspects, and was working in a large factory, I made a visit to his residence and found the following: With his wife and the baby mentioned, he had removed the week previously from a larger city. The baby had a very typical unilateral excoriating nasal discharge which, the mother stated, had been present some few weeks. Not really ill, the baby had not had medical attention. The throat was normal and, other than an apparent moderate anemia, there was no evidence of toxin absorption. The mother stated that at first there had been times when she thought the baby was a little feverish. With the institution of routine treatment there was a complete cure at the end of ten days, with a return of improved color of mucous membranes, which the mother noted as well. Neither parent had previously had the disease to their knowledge, although it is possible that the father, who at this time did not have clinical diphtheria, had had the same previously, and since had recurring follicular types, of which the present attack was one, and that he had previously infected the baby.

Case 2. Baby F., age 1. An older sister, age 7, had been found in the school a nasal carrier. Family included also a boy age 4. The latter was manifestly from the lesion the oldest carrier, the girl and baby being recent ones. At the time and during the month that it took to cure the baby there were no signs of toxin absorption in the baby.

Proof that such nasal carriers acquired their immunity during the process could be obtained only by Schick reactions previous to and following such carriage. This, in my experience, is the only value of the procedure and is as impractical as are the other fields of its use as compared to the clinical knowledge learned at first hand in the field.

One of the most interesting features is the infectiousness of the carrier. Not having sufficient assistance to painstakingly trace each carrier, and that one's relation to preceding or future carriers, with relation to cases, makes the matter one of practical inference of repetition of instances rather than actual statistics. There is good clinical evidence that the recurring chronics are less case-infectious than the acute carriers made by that carrier. It was the rule to find the second or third carrier before there was any reported or found cases, and the latter were more closely connected with the recent carrier as to being playmates. While we generally see such a sequence there is rarely to be found the possibility that primary faucial diphtheria makes nasal carriers. Of this series there were two such. One is the father of Case 1, and the other is related at length as being in the same category as the infected articles stored for years in a house which finally give rise to a case on being handled.

Case 3. While caring for two younger children with German measles, Mrs. C. had an ordinary follicular tonsillitis. One week later the boy, age 9, now ready for discharge from measles, had a nasal discharge, and would have been seen by me but for the fact that his sister, age 6, was coming down with the measles and the placard remained on the house. Two weeks later, when called upon because the latter case was convalescent, I was told by the mother that the girl had just developed a sore throat which had just been cultured as suspicious of diphtheria. Examination of the mother and older girl in the family showed nothing, while the boy showed a unilateral atypical discharge. Cultures showed K-L in both the nares of the boy and the throat of the girl. The following day I obtained the history given of the mother, as well as the fact that during the preceding month the boy had had contact outside the house with but one boy, and that one after the discharge began. Further inquiry revealed the fact that 16 years previously the mother had lost one child with diphtheria. Cultures from the older sister and the father, as well as the boy acquaintance mentioned, were negative. That from the mother, who showed no inflammatory reaction of the throat, showed a few very suspicious organisms. While an almost unbelievable period for holding an organism in the tonsil, the following facts warrant consideration: a total absence of sore throats during the 16 years; that the girl's faucial diphtheria followed two weeks after the development of the boy's nasal discharge rather than at the beginning of that time, and coincident with the onset of the attack of her measles; lastly, total absence of carriers or cases of the disease, previously during one and one-half years and three months since, in that neighborhood. Practically, the case is related as a similar analogy also to the possibility of reinfection of urethritis, which is admitted up to 10 years, but raises a laugh after that time. In other words, there is need to absolutely disprove nasal delivery boys, etc., as not having infected the boy's nose, proving the rule rather than the exception. This rule is strengthened by the fact that I have had absolutely no recurrent cases and no secondary cases of the disease during 1917, and but one recurrent case in 1916, when the isolation hospital returned a case, a visible nasal carrier, though a reported double negative culture. Such also happened the preceding year and once the present year.

Treatment of the carriage is of the utmost importance, since literature abounds with so varied measures. The latter all depend, unfortunately, on the demonstration of the carriage as manifested by the organism without regard to the local conditions. I am on record as to carriers showing a pathological picture (Case 3 even as merely suspected corresponds), and would show that the duration of the carriage under treatment is in accord. Personally, being an unproven though suspected case of nasal diphtheria after a service in the South Department of the Boston City Hospital, able on occasions to discharge false membrane from my left nares for a period of months, I found relief only through the continuous use of gum camphor, as advised by Dr. Leland. On the basis that with increased resistance the recurrence of acute attacks would be diminished, both in frequence and intensity, I continued its use and did not have a septal operation for the pre-existing deformity, at that time markedly increased, as advised by others. From 1901 until 1903 such treatment continued to ease numerous acute recurrent attacks. From that time, with a knowledge of the use of eucalyptol, I used a 1% solution of both ingredients in mineral oil with even better results. For the past ten years I have had an absence of acute attacks, even with possibly an unusual number of so-called head colds. From my appreciation of my first year's study of diphtheria in 1914, in its relation to my personal case, I have used the solution constantly in nasal carriers in the following manner: constant inhalation by means of dropper, nasal swab or atomizer every one hour in a 1% solution for all individuals over age 5. As frequently irritant in younger individuals, a one-half per cent. solution gives the same results. Its therapeutic use is added cause for commendation as against using first a watery antiseptic and later an oil protective, in performing a simple operation that can be done by any mother or an older child easily. I have personally tested out the hypochlorites followed by oil, and cannot demonstrate any advantage. I would point out that its use is hourly for days and weeks as contrasted with the present-day literature of failure with such antisepsis when used once or twice a day, or with other gases when exposure is for a stated exposure once daily. Incidentally there may be seen the same good results in all nasal carriers of streptococci and pneumococci. For two years I have replaced formalin fumigation with nasal disinfection with this solution and have an accurate knowledge that the hundreds of ounce bottles that I have left with any variety of respiratory carriers has been of great aid in present disinfection and in future prevention. The secret at the basis is to saw away at the partial or complete blocking of the anterior nares until a passage is obtained. When obtained, it is the rule to obtain negative cultures repeatedly, as well as to have the local irritation signs clear up, clinically giving knowledge as well, that the cure is complete. I say complete—it is not appreciated that at some future time the individual may again present an acute picture found in connection with reported cases in the neighborhood or found, as in two instances, by the survey of the school as known carriers the previous season.

Importance of Carriers. I have shown that secondary and return cases are absolutely dependent on family carriers. It is possible to assert with a marked degree of confidence that neighborhood secondary cases are dependent upon the extra-family or extra-house carrier. When such a condition exists, and from the frequency of such with reference to a reported case which has been shown, there continue neighborhood cases until that one is found. I know of no unknown problem or mystery of infection that is not explained by an eventually demonstrated carrier. When the majority or all in the neighborhood are found, one understands why each and every present-day procedure of protecting others, whether in terms of milk bottles, clothes and individuals, fails unless you have locked up in that house the carrier. Boards of health should be liable for every carrier. To aid in finding him, medical detectives must have as effective a system as the police for rounding up burglars before they do damage or, having done damage to catch him. If, then, every bar of the present-day procedures is thrown down and placards as well as restrictions placed against the carrier, we can safely permit, as we do here, conduction of even raw food business, can make home treatment possible under any condition, and, finally, can teach the public to fear a very definite visible condition in the well individual, rather than that inside a placarded house of a case—the condition is similar to the summer open garbage can and its million flies. It makes possible personal liberty; it restores the rights of the public. It is humiliating to a sanitarian that the victim dead of the disease must be placed in a hermetically-sealed coffin, must have a private funeral, while the cause of that illness is outside among the crowd of playmates, friends, and the morbid curious who otherwise would not be there, and this one again exposing others to infection. If the carrier who made the one ill had not been previously found it should be a part of the health authorities' responsibility to invite a public funeral in order to then find among the dead's intimates the carrier. It is not infrequent that the exposure was at a party where other neighborhood, and even other community children were present, and it has been impossible to reach all such children. The field work must be extended to safe milk, along the present-day lines of safe water and typhoid. Clean up and keep cleaned up, the farms and dairies in terms of individuals who may be found to be carriers. We used to grade premises to control contagious diseases; we now grade milk similarly. The future in either case is to grade the individuals.

Results. What have we to show for prevention? The last severe epidemic of measles comparable to the one of 1917 was in 1906. During that latter year there was no especial prevalence of diphtheria for the first seven months; then suddenly, without anything in common, began an outbreak. For the five remaining months there were 35 deaths, with 9 more during the next three months of 1907. During a similar period in 1917 there were 8 deaths, although I have stated early in the paper that the frequency of cases during the early part of the period was as alarming as at the start of the previous epidemic. For the first three months of 1918, there were 5 deaths, or a total of 13, as against 44. Further, we have halved the deaths of latter 1917 and early 1918, as compared to those of the year previous. Such positive results bespeak for the rationality of the continuous operation of detectives for finding carriers, when two months of such work can produce said results.

Summary. The continuous search for carriers in controlling diphtheria is an exact sanitary measure of prevention.

All individuals with acute catarrhal nasal conditions are the potential acute nasal diphtheria carriers; it requires the presence of a chronic carrier, generally also nasal in type The permanency of the former when made a carrier is dependent on the degree of nasal obstruction.

All individuals convalescent from any respiratory disease, however mild, constitute the largest proportion of nasal carriers of diphtheria. Investigation of all such individuals and their isolation, if carriers, is the essential basis of control of diphtheria.

In general, cases follow the production of acute nasal carriers by chronic ones.

Responsibility for any frequency of the disease is solely that of health authorities.

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A PLEA FOR A LEGITIMATE TRIAL OF SCIENTIFIC MEDICAL METHODS IN CHRONIC INTESTINAL CONDITIONS BEFORE RESORTING TO SURGICAL INTERFERENCE.*

BY MABEL D. ORDWAY, M.D., BOSTON.

IN view of the recent popularity of operations for removal of the cecum and a portion of the colon in conditions where there is no foreign growth and no serious constipation amounting to obstipation (in which conditions the Mayo Brothers and others believe operation necessary, while in those above mentioned they consider it culpable), for an alleged benefit that such procedures have upon idiopathic epilepsy and other conditions of nervous system irritability, it seems pertinent to offer the following case. Although not studied with the extreme scientific accuracy possible in such institutions as the Rockefeller Institute or in our own Evans Memorial for Scientific Research, the case was followed with sufficient intelligence to prove that study in such institutions is necessary if progress in medicine is desirable. Much has been said and still is to be said of the vicious circle existing between the nervous and digestive systems. There scarcely exists a neurasthenic or psychasthenic, so called, who has not had a disturbance of some part of the digestive system at some period of his disease. To break this circle is surely of importance. We all know that in a neurotic individual sudden shocks will at times cause vomiting and diarrhoea, which rest and time will readjust, and that constipation even of a severe type has been brought about, at times indirectly, by psychic disturbances. The complicated, sympathetic nervous system, with its far-reaching relations with the internal secretory system, will continue to reward us for our attention to its miracles. Of great value also are certain investigations into psychic conditions, with their

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* Read before the New England Women's Medical Society, March 21, 1918.

influence through the sympathetic system upon the glandular secretions, which in turn affect physical and psychic conditions, establishing a harmful or beneficial, vicious or benign circle. However, if we are ever to work out these important relationships, we must prevent crude interruptions in the nature of unnecessary surgical interference which affect indirectly psychic, sympathetic, glandular and again psychic as well as the physical processes directly affected by needless removal of tissue. Undoubtedly, intestinal intoxication is an important pathological condition, but many careful researches are needed to prove the toxicity of the intestinal contents, its effect upon the irritability of the various tissues of the nervous system, etc.; for we must not accept, as truths, unproved conclusions.

Case. The patient is a woman 46 years old, weight 90 pounds, height 6 feet, best weight 150 pounds. Second attack of mental excitement, which has lasted 6 months. First diagnosis, manic-depressive insanity; second diagnosis, paranoid dementia precox. Digestive system: For many years previous to mental illness the patient suffered from indigestion and constipation—now for many months has been tube fed, taking chiefly eggs and milk—2-4 qts. milk, 6-12 eggs a day. The patient is much emaciated—skin and conjunctivae jaundiced appearance—tongue, heavy brown coat, sordes on teeth, no movement of bowels without enemata and at times manual extraction of feces necessary. There is a double mitral murmur of heart which is somewhat enlarged and irregular—rate from 110 to 120 for many days—yet bl. pr. 110-80, fairly constant. Diet changed to: Beef juice and whey for three days, then beef juice; eggs, 3 or 4 a day; sugar, large amounts; fruit juices. This diet, advised by a competent internist, was followed for a week. Then regular food was taken for a week—eggs, milk, and all food except fish and meat. The patient seemed to gain, and bowels acted more easily for a day or two, only to fall into the previous condition. At this point, in view of the fact that there arose a question of the mental condition being due to a chronic form of infectious exhaustive psychosis, a thorough urine, fecal and blood examination was made, with the following report:

Blood. Hemoglobin, 85%, reds, 4,360,000; white cells, 7,400 per cm. Dif. count: 200 white cells; red cells, normal appearance; polynuclears, 78%; lymphocytes, 7%; mononuclears and transitionals, 14%; eosinophiles, 1%.

Urine. July 27, 1916: Total for night, 200 cc.; for day, 650 cc.; for 24 hours, quantity, 850 cc. (diminished). The second specimen gave day quantity 725. Color high, cloudy, weakly acid reaction; sp. gr., 1021. No albumin though the urine clouds promptly on heating, due to the phosphates, but clears on addition of acetic acid. No excess of indican, although the urobilin is increased. The urea is 2½%. No sugar is present. The sediment contains an enormous number of calcium phosphate crystals, together with a few red blood corpuscles, a few leucocytes and a very few granular cells, chiefly from the renal pelvis. No casts could be discovered. This examination shows a severe, so-called, phosphaturia, with consequent mild irritation of the urinary tract.

Fecal Examination. The stool was acid in reaction; contained the fine "frog spawn" mucus from the small intestine and a few larger shreds of mucus coming from the colon, to which were attached many granular cells whose nuclei could still be discovered. The microscope showed a mass of fatty acid needles in every slide, to which the acidity of the stool could be ascribed. No other food fragments could be detected. There is, then, an intestinal catarrh, most marked in the small intestine, with marked impairment of fat absorption. This is apparently not due to any interference with the bile elimination, since none was discovered in the urine. This phosphaturia is variously ascribed to hyperacidity and colon catarrh, which interferes with the normal elimination of calcium by the colon. I have found diet and the use of magnesia beneficial, and think that pankreon, if it can be procured, would help the fat absorption. This is all my chemical and clinical necromancy shows me in reading the metabolic conditions of your patient. I enclose a diet list which I employ in such cases. (Signed) A. E. Austin.

On August 1, I find a note copying a report stated as follows: I found no evidence of tuberculous or cancerous process in the intestine. There was no blood, nor were there any fragments which might come from a growth in that vicinity. What the reactions are from which she suffers is hard to say, but I hope that on a modified diet she will improve.—A. E. A.

DIET LIST FOR PHOSPHATURIA.

Breakfast. A baked apple or pear with cream and sugar; picked fish or bacon cooked crisp; toast or stale rolls with plenty of butter; coffee with a little cream and sugar. After the meal, two teaspoonfuls of milk of magnesia are to be taken.

Dinner. Soup (clear) if desired; any kind of meat cooked in any way desired, except liver, sweetbreads, or kidneys; no vegetables except white turnip, asparagus, onions, watercress, cabbage, cauliflower and rice. Any pudding of rice, sago, tapioca, cottage pudding with apples or pears cooked with it. After the meal a glass of Vichy water.

Supper. Cold meat, fish in any form, oysters cooked in their own juice with butter or eaten raw, but not in milk stew; apple sauce or stewed or canned pears, or jelly or marmalade made from apples, pears or peaches; stale rolls or toast with plenty of butter; after the meal, two teaspoonfuls of milk of magnesia.

Remarks. Tea and cocoa should be avoided; no milk or milk products other than those mentioned should be taken. These vegetables must be avoided: spinach, beets, potatoes, green peas, green beans, tomatoes, celery, as well as the fruits, figs, currants, plums, and strawberries (avoid them whether fresh or preserved). Milk and particularly the yolks of eggs are to be avoided.

Obviously this diet could not be given through a tube, although gastroenterologists of note claim that practically all essential elements, including vegetable juices, etc., can be given in that way. We were, therefore, obliged to resort to forced feeding which, thanks to the wonderful patience and coöperation of the nurses who were much interested, we faithfully kept up, carrying out the directions for feeding to the letter. The following report three months later rewarded us for our effort, considering the fact that the clinical symptoms showed a corresponding improvement.

Nov. 27, 1916. I have made a re-examination of the urine and feces of your patient and find that the urine is now practically normal, containing no indican and no calcium oxalate, nor phosphates; in fact, is absolutely free from sediment of any sort. This, I think, justifies the diet which was suggested, together with the general improvement of the patient, and at present, I see no reason why she cannot return to eggs and milk, in spite of their excess of calcium.

The stool, however, though containing no starch or meat fibers, does contain a large amount of fatty acid crystals, and at the same time being so light in color that I am sure there is some deficiency in the discharge of bile into the intestine. This extreme loss of fat in the stool is probably why you have been unable to make more progress in increasing the weight of the patient. As the fat is wholly split, we can hardly hold the pancreas responsible for this condition, but must attribute it, as stated, to deficiency of bile.

The connection between indicanuria and oxaluria and mental disturbances is not so clear, but many works have been published showing that the mentally unbalanced usually possess an increase in indican and an increase in the ethereal sulphates, which so often go together.—A. E. A.

Our next duty seemed clear—to endeavor to increase the flow of bile by colalin or other bile stimulants, then to decrease fat in diet to establish a fat tolerance as it were, to try various kinds of fat, since it might be supposed that the problem of fat metabolism might bear an important relation to stability of nervous tissue.

Here is a case in which for long periods the physical condition seemed hopeless—a patient so insane as to make coöperation most difficult in the beginning, and yet three months of enforced rest and enforced rational feeding so regulated the bowels that they moved normally every day with no enemata, digestion was very good, tongue perfectly clear and appetite very good. (Indeed, the patient herself said that her digestion and bowels had not been in so good a condition for twenty years.) Had the cecum or colon in part been removed before such an experiment had been tried, it would have been impossible to have given chemical or physiological treatment a chance. Had mechanical massage been tried, we might have overvalued its effect. Do not cases of this sort lead us to believe in an exhaustion of our medical methods under trained observers before resorting to surgical methods?—although in acute obstipation or cancer not to employ surgical aid at once is equally culpable.

Since the New England Hospital has offered surgical advantages to Massachusetts Homeopathic Hospital women, may we not hope that the Massachusetts Homeopathic Hospital may offer to New England Hospital women the advantage of the point of view gained by the excellently trained scientific research workers in their Evans Memorial for Clinical Research? It should be added that this mere glimpse into scientific methods would seem most crude to their workers, trained as they are in various body function tests, etc., but as Dr. Folin once said: "If you only have enough training to catch the research point of view, you will be able to refer problems of clinical importance to those scientifically trained and thus do your part toward the advancement of medical science."

The present time is hardly one to advocate extensive research, when so many pressing problems are upon us, but let us then be temporarily content to follow conservative proven methods, lest for want of time and money and trained workers, we lose sight of truths which once lost sight of are difficult to see again. We can hope, in more propitious times to work out the problems which now we may merely note as worthy of consideration.

* * *

Clinical Department.

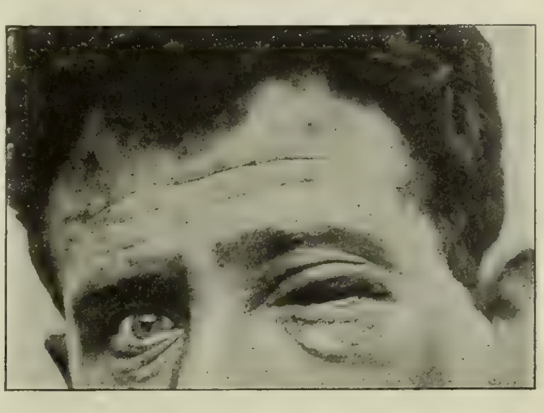
PRIMARY SYPHILIS OF EYELID, WITH REPORT OF A CASE.

By Henry D. Lloyd, M.D., Boston.

In regard to chancre of the eyelid, Marshal[1] states: "Most frequently the chancre is on the conjunctiva." The same authority gives the order of frequency as conjunctiva of lower lid, the cul-de-sac, and lid margin. Following these situations in frequency are the inner angle of the eyelids, upper lid, and cul-de-sac; next the ocular conjunctiva; the cutaneous surface is the least common situation. Lloyd Thompson in his recent monograph, in discussing extra-genital chancres, places primary infections of the eyelids as fifth in order of frequency, those of lips, tonsils, tongue, and breast occurring with greater frequency in the order named, while those of the fingers are sixth.

REPORT OF CASE.

August 14, 1917, H. T. came to the South Medical Department, Massachusetts General Hospital, and upon close questioning gave the following history: Left eye had bothered him about six weeks, possibly longer. Sometime in June he went out on a "party," but denies drinking to such excess that he did not know what he was doing. He absolutely denies any sexual exposure. "The morning after" in making his toilet he noticed that the towel upon which he wiped his face was quite dirty and later ascertained the fact that the man who previously used the towel had the pox. On or about the first of July his eye began to bother him.



Physical examination showed a well-developed and nourished male, color good. Tongue somewhat coated, mucous membrane of mouth and throat not abnormal. Pupils equal and react to light and distance. Knee jerks present and equal; normal. Left eye shows a thickened upper lid with a superficial ulceration 5 x 8 mm., situated at outer canthus, this ulceration occurring upon the skin surface of the upper lid. The pre-auricular gland was enlarged to the size of a large pea, firm, not tender. There was also a chain of enlarged glands in the posterior cervical triangle upon that side. The skin showed a widespread maculo-papular rash of characteristic color and distribution, extending upon the forehead and into the scalp. There was no sign of genital primary or of one about the anus. Neither were the inguinal glands remarkable.

We tried to recover spirochaetae pallidae from the lesion described above, but failed. The Wassermann was strongly positive. The patient was given two injections of diarsenol, of 0.4 gram each, intravenously, at weekly intervals, and the perchloride of mercury by mouth. He failed to return for further treatment. Early in December, 1917, after writing him several letters the patient came to my office and submitted to an examination. At this time there were no clinical signs of active syphilis and the left eyelid showed only slight thickening. The Wassermann reaction was still strongly positive. In spite of advice, he has not returned for further treatment.

My thanks are due Doctor C. Morton Smith for permission to report this case.

REFERENCE.

[1] Power and Murphy: System of Syphilis.

Society Report.

BIOLOGICAL CLUB OF PHILADELPHIA.

Stated meeting Thursday, February 28, 1918, at 8 p.m., held in Cadwalader Hall of the College of Physicians of Philadelphia, Professor E. E. Wildman presiding.

How Can Biologists of Philadelphia Best Help the Medical Profession in the Present Emergency?

THE DEMAND FOR AND TRAINING OF LABORATORY TECHNICIANS.

Dr. John A. Kolmer: In the present day of refined and practical laboratory methods for the diagnosis of disease, not a small part of the education of the medical man is embraced in a working knowledge of laboratory methods. Since the entry of the United States into the war the demand for technicians in our laboratories is constantly increasing. It is probable also that such technicians will be required in the hospitals for the wounded and in the laboratories of the cantonments. The object of this communication is to emphasize the importance of large laboratories, and particularly those connected with teaching hospitals, to undertake the systematic training of properly prepared young women in laboratory methods to meet this demand. In the past two years the polyclinic has prepared more than seventy young women for this work. In the course of instruction the greater amount of attention is devoted to technic and practical instruction; the classes are small and the object is to give a broad training enabling the technician to cope with a varied amount of work. Candidates for instruction must be high school graduates or possess the equivalent in preliminary education; a knowledge of chemistry and biology is helpful but not essential. In the Polyclinic Laboratories the first course of instruction includes systematic training in the preparation of the various culture media, the methods of embedding and staining sections of tissue, preparation of stains, sterilization of glassware. A successful examination in these admits the student to the course in clinical pathology. At the completion of this course I advise students to fill positions for wider experience and then return for instruction in complement-fixation technic, with particular references to the Wassermann and gonococcus complement-fixation tests. Qualified young women are readily trained in the conduct of the Wassermann reaction. Instruction is also offered in bacteriology and the preparation of bacterial vaccines and in advanced clinical pathology. The majority of our technicians have been offered salaries averaging $900 a year with maintenance. It is to be hoped that other States will follow the example of Pennsylvania in requiring her institutions for the care of the sick to offer adequate laboratory facilities for the modern diagnosis and treatment of disease and for the instruction and experience of internes. In order to meet the increasing demand for laboratory technicians it is hoped that teaching institutions will offer adequate and comprehensive courses of instruction in this connection.

I would emphasize that owing to the increasing demand for laboratory technicians, by reason of the fact that the State of Pennsylvania requires hospitals to employ technicians, to fill vacancies created by the absence of bacteriologists in the Federal Service and because the Federal Government is requiring the aid of laboratory technicians, biologists of Philadelphia can aid in the present emergency by carefully selecting young men and women for training as laboratory technicians. Owing to the growing scarcity of physicians, which may be augmented if the war continues, the biologists of Philadelphia may do much by preparing young men and women for the study of medicine. In addition to these aids, the biologists of Philadelphia may be able to conduct research work of distinct benefit to the country at large, and the Biological Club should endeavor to coöperate with the National Research Council.

HOW CAN THE BIOLOGISTS OF PHILADELPHIA BEST HELP THE MEDICAL PROFESSION IN THE PRESENT EMERGENCY?

Dr. Berta M. Meine: The present crisis, which presents unparalleled upheavals in every phase of our work, has distinctly differentiated the past, the present, and the future. Our best plans for progress for pre-war times belong to the past. The present contributes its problems of supplying our own and our allied armies with medical officers, of doing the medical work at home and of supplying physicians for present and future demands. The future comes after the war. Every possible effort to find recruits for our profession must be made and these must be trained with due regard to the new knowledge and methods developed by the war. Dr. Horace D. Arnold in an address at the Medical Conference on Medical Education said that every effort to increase the output of physicians must be made, and that the modern thorough training with its broad scientific basis should be fully maintained. He recommends a reorganization of the curriculum, with a view of a greater uniformity in the course of instruction, the rearrangement and readjustment of the course to include new and important knowledge developed by the war and to omit non-essential details. This would make the transferring of students from one school to another possible without the usual loss of time required at present. Sessions of the medical schools during the summer were also thought advisable, and Dr. Arnold suggested that this method of time saving may have to become compulsory. He said that "Medical teachers of the draft age play a most important part in the methods of medical education adopted in recent years. The induction of these men into active service would seriously impair the efficiency of medical teaching unless they could at once be replaced by equally satisfactory teachers." . . . . . "The scarcity of teachers is more likely to be felt in the laboratory subjects. A possible solution of this difficulty may be found in the combination of the teaching forces of two or more schools in a medical center. The schools should consider the feasibility of such combinations, and should prepare to make such arrangements if they become necessary." It would appear then that the biologist, as teacher of the high school student, could assist the medical profession very materially in obtaining desirable recruits. He has a wonderful opportunity of selecting and interesting the suitable young men and women. He could not only encourage the student to study medicine, but assist him in obtaining his premedical work in the best manner and shortest time. On the other hand, advice to the student who thinks he would like medicine, but who is made for other things, might avail much for the student and the medical instructors. Another suggestion for helpfulness is that the medical profession and the biologist consider seriously the advisability of the biologist teaching certain of the branches of medical science, such as bacteriology, chemistry, etc., if the combination of medical teaching becomes imperative. There are not enough medical men beyond the draft age to supply the vacancies. Never before has there been more fully realized the necessity that each individual contribute the very greatest amount of the very best quality of work that he can do better than anything else. Therefore I would most heartily second the suggestions made by Dr. Kolmer. The highly trained non-medical research worker may direct his attention to problems in preventive medicine. He may work independently or with the physician. As associates, the clinician and the laboratory worker may produce results far more valuable than either of them could independently. Specially trained persons may do the outlined clinical laboratory work and probably in some instances better than the more highly trained person with many other duties. Send us the best you have and we shall attempt to train them well and place them where they are most needed.

Book Reviews.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1916.

This volume contains the reports of the Council which have been adopted and authorized for publication during 1916. It includes reports of the Council previously published in the *Journal*, along with such editorial comments as have accompanied them. In many instances there have been added to these reports the more strictly scientific matters which, because of lack of space or because of their highly technical character were not published in the *Journal*. In addition, the volume contains reports of the Council which, because of their lesser importance, were not published in the *Journal* and which as a matter of record are included here. That the Council's official reports may be made available to physicians, chemists, pharmacologists and others interested in medicine, the Council authorized publication of this volume.

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THE FIGHT AGAINST VENEREAL INFECTION.

The conservation of the nation's health is a subject which has been engaging more and more study of late, and during the war the great drain upon man power entailed by venereal diseases has brought prophylaxis and prevention before the public. We ought to note here, as Sir Francis Champneys points out, that there is a distinction between the two. In this view prophylaxis means: (*a*) the provision of disinfectants for use before and after exposure to infection, and (*b*) the issue of prophylactic packets to men going on leave; while prevention includes these measures and early treatment of contaminated men and of those in whom syphilis or gonorrhea have manifested themselves. From the discussion and advertisement of venereal diseases carried on in the press, the real nature of prophylaxis is beginning to dawn upon the public mind.

In spite of the publicity of the discussion, the Anglo-Saxon nations are still unable to deal successfully with the prevention of venereal diseases. The practical question is unsettled,—Which is the greater evil, that numbers of soldiers should return with venereal diseases to infect future generations, or that they should visit houses under medical inspection, in which the French and Germans and other European nations see no harm? It is true that the ideal thing would be that soldiers should do neither, and many doubtless do maintain a clean standard, but it is estimated that the number is comparatively small. Thus in a letter published in England it is stated that a "million men have come overseas. Over one-third of that million becomes infected with venereal diseases every twelve months, and many thousands are constantly sick in venereal disease hospitals." In sober truth the actual number is even larger. (*The Nineteenth Century*, September, 1917.)

Now that American troops are being assembled for overseas duty and in home camps, it is obvious that the only way of protecting them from this danger is to create a public sentiment in favor of prophylaxis. Unfortunately, there is not a similar clarity as to the proper means. Since the outbreak of the war we have read a great many different opinions; we have examined the evidence and studied the reports from France, Germany, Russia and Italy with care, and the impression left is that success in combating venereal infection—we do not mean the diseases when they have once declared themselves—is essentially one of discipline, both military and national.

Under the head of military discipline comes the use of the prophylactic packet. It is certainly a debatable point, involving moral and religious questions of the utmost gravity. As to the ethics of the practice of handing packets to soldiers and sailors, medical authorities and high officials do not agree. For example:

"The use of this packet I believe to be immoral; it savors of the panderer."—Mr. Daniels.

"It should be resorted to as soon as possible after exposure."—Dr. Charles E. Riggs, U.S.N.

"The ethical question depends upon the manner of prophylaxis—whether it means before the act; or after the act, but before the disease shows itself."—Sir Francis Champneys.

There seems to be no objection anywhere to the use of the packet after exposure, but whether it should be forced upon soldiers and sailors beforehand is a different matter. If the issue of the packet becomes a disciplinary rule, so that every soldier and sailor is given the prophylactic, whether he intends to use it or not, it obviously tends to suggest its use, and to drive men from the class of abstainers into those who deliberately indulge in irregular sexual intercouse. The effect, as a matter of experience, is not uniform. As Sir Francis Champneys well observes: "The question arises whether more medical harm is done by adding to the number of those who expose themselves under some protection than by limiting the protection to those exposed to the risk of infection." As there is no absolute prophylactic, and as the safest prophylactic of all is the avoidance of exposure, there seems to be as yet no final answer to the question.

Apart from moral considerations, the value of prophylactics is a question of discipline. In the German and Austrian armies, they have been most useful, and in many British regiments it is known that they have greatly diminished the incidence of venereal diseases. But the conditions in these armies are extremely different. In the Teuton armies the conditions are favorable to medical and police inspection, and a merciless system of registration of prostitutes. In countries where the state expects to superintend every action of the people's lives from the cradle to the grave, it is obvious that men and women alike will be allowed little freedom of choice, and they are taught to obey sanitary regulations that in Anglo-Saxon states are still matters of individual judgment. It happens that, owing partly to discipline and partly to national docility, the scientific moralists who inhabit the Central empires are as near the model of forced prophylaxis as any race is ever likely to get.

The extent of this discipline among soldiers and the civilian population is revealed in the army orders published this winter in the *Zeitschrift für Bekämpfung der Geschlechtskrankheiten.* The military authorities in German cities, recognizing the peril from loose women that threatened their men, took the problem in hand with characteristic thoroughness at an early stage of the war, and published a list of cafés, hotels, restaurants, and picture shows that were absolutely forbidden to men in uniform. Some quarters of the towns were entirely closed to soldiers, and all questionable female characters were ruthlessly cleared away from the streets. Certain German taverns where waitresses served beer and wines, were closed, putting an end to a social danger. The soldiers on leave, and the sick and wounded, have very little liberty. They are not only kept within the lazaret and barracks, but are forbidden to have any intercourse or exchange words with the people passing in the street.

In comparing the street conditions of Germany and England and America, nothing strikes the medical observer more than the number of men in uniform wandering about at will. It is inevitable that there must be a considerable amount of clandestine prostitution. A great obstacle in the way of sanitary and moral prophylaxis presents itself here. It may be inquired how far the use of prophylactic packets will avail. Under these conditions it is at least doubtful whether men will go to the trouble of applying calomel cream and injections of protargol and permanganate solutions. Valuable as these are if properly used, the evidence shows that the social dangers of the cities must be grappled with in other ways, that is to say, by disciplinary measures. Otherwise there is the danger of falling into the old error of locking the stable door after the horse has been stolen. Thorough-going prophylactic measures include, besides disinfectants, the protection of both sexes from the risks of street intercourse.

The more we examine the problem the more clearly do we perceive that the essence of prophylaxis is, after all, moral in its nature. That young men of healthy physique and certainly not deficient in virility can abstain from irregular sexual intercourse without harm is today an established physiological fact. But to the expert in venereal diseases, it does not seem to follow that the use of prophylactics before exposure is immoral. Yet Sir Francis Champneys, who represents medical opinion as well as the National Council for Combating Venereal Diseases, says: "If there were no such things as moral considerations, no doubt it would be right to issue prophylactic packets without any restriction as to time, and to teach our children how to avoid venereal diseases without any regard to morals and at all costs. . . If 'scientific medicine' cannot be satisfied unless packets are given before the act, there is an absolute deadlock, and a choice must be made." As this is the official sentiment of England and America the choice is, indeed, very difficult.

In this discussion but little is said about such prophylactics as thorough washing with soap and water before and after exposure. It seems somewhat inconsistent that these measures are not regarded as immoral. They are among the most practical, and in European clinics both sexes are taught their value. They have one great advantage. The influence of alcohol, under which so much irregular sexual intercourse occurs, does interfere with the use of a packet, and of such remedies as calomel ointment, tubes, and injections, but ablutions with soap and water are so much a matter of convenience that a man, unless he be very drunk, will take such simple measures of cleanliness.

In view of the dangers of venereal diseases, of the facts that syphilis ranks third or fourth among the killing diseases, that gonorrhea is the cause of sterility and nameless suffering among women, that gonorrhea and syphilis are the causes of blindness and insanity in the offspring, it does not seem immoral to avoid these miseries, even at the risk of suggesting vice to some who are inclined to it. Most medical men, we believe, take this view, though they may differ as to the relative value of medical prophylactics and the best way of using them.

* * *

ANNUAL REPORT OF THE STATE DEPARTMENT OF HEALTH.

THE annual report of the State Department of Health of Massachusetts has been submitted for 1916. The Department is organized in seven divisions, all of which have done efficient work throughout the year. The Division of Sanitary Engineering has given advice to one hundred and fifty-four cities and towns through the year, in regard to water supplies and sewage. All sewer outlets discharging into the sea or tidal waters were examined during the year, and over 300 sources of water supply for towns, cities, and fire districts controlled by analyses. Sewerage systems have been inspected, and continued supervision maintained over water courses to protect against pollution.

The Division of Water and Sewage Laboratories performs all laboratory work required under the statutes governing the purity of inland waters. It also makes extensive investigations, and does analytical work in problems of water supply, sewage disposal, and trades wastes disposal. In the past year over 6000 samples of water, sewage, effluents, factory wastes, etc., were analyzed in these laboratories, and bacteriologic examinations of over 4000 samples were made.

The Division of Food and Drugs continued its commendable work under the statutes covering food and drugs, including milk, cold-storage products and meat-slaughtering inspection. Over 11,000 samples of milk, food, and drugs were examined during the year. A large amount of work was done in attempting the manufacture of dioxy-diamino-arseno-benzol, or allied substances for the treatment and cure of syphilis. The researches promise success, and if successful will have a greater effect upon the problem of syphilis than any other known procedure.

The Division of Communicable Diseases has made notable improvements during the year in the methods of control over communicable diseases. In this Division there is now established an endemic index for each of the important diseases for each community in the Commonwealth. By a glance at this index any unusual prevalence is apparent, and prompt investigation reveals whether it is a mere coincidence or the beginning of an outbreak. Much better reporting by physicians is evident, and calculations based on the ratio of deaths to reported cases seem to indicate that Massachusetts physicians report more thoroughly than those of other States. Over 22,000 specimens were examined by this Division during the past year, at an average cost of 26 cents per specimen.

The scope of the work of the Division of Biologic Laboratories was enlarged during the year. The work of examination of dogs for rabies, and the complement-fixation test for glanders, have been done for the Bureau of Animal Industry. There were distributed by this Division during the year about 175,000 doses of diphtheria antitoxin, 1696 doses of anti-meningitis serum, 130,000 doses of vaccine virus, and 46,000 doses of typhoid prophylactic. For the Bureau of Animal Industry over 1000 tests were made. Over 25,000 tests for the Wassermann reaction were made during the year, at a cost of less than 20 cents per test.

Over 60% of the health officer's problems may be attributed to diseases which can be reduced in prevalence only by means of education in personal hygiene. Educational methods alone promise results in infant mortality, cancer, and diseases of the circulatory and urinary systems. Reduction of the death rates, therefore, depends almost entirely upon education of the individual citizen, and this work is carried on by the Division of Hygiene. All recognize the danger from communicable diseases, and the value of efforts to prevent them. All do not yet realize in equal degree the economic loss resulting from sickness in general, the high infant death rate, children poorly born and handicapped in physical and mental development, school children below par and unable to keep up with the normal child, individuals needlessly incapacitated by organic diseases of the heart, blood vessels and kidneys, in considerable part the result of faulty living, and the loss to the community of lives from such diseases as tuberculosis and cancer because of the failure to detect these diseases in their early stages, when prospect of recovery is most promising. This knowledge must be brought to the people in general, and by means of lectures, exhibits, and pamphlets the Division seeks to do it. During the year, 628 lectures were given, and nearly 100,000 attended them. Moving picture health films were exhibited 372 times, and the child welfare health exhibit shown in 24 cities and towns.

Statistics show that the infant mortality rate is steadily decreasing, but this is largely due to good work in the large cities. Forty per cent. of infant deaths occur in the first month, showing that prenatal causes are a potent factor. More prenatal work must be done, especially in small communities, where the rate is far too high. Work for school hygiene is often unsystematic and poor. There should be a physical and mental survey of every school child made at least once a year and recorded on a card, together with the outline or prescription of hygienic treatment necessary to bring the child to normal or maintain it at normal. Not only children with defects should be prescribed for, but also those below normal in physique or mental equipment. The tuberculosis campaign of the Department has made great strides in the past year. The greatest possibility in the prevention of tuberculosis, that is, through the school child, will not be realized until there is a uniform scientific system of inspection of school children. All cities and towns of more than 10,000 population are now complying with the law to provide a tuberculosis dispensary satisfactory to the Department. In the ordinary diseases of childhood—measles, whooping cough, and scarlet fever—health officials are doing everything possible in an official way, so that still further reduction in these diseases depends largely on the education of the individual. Diphtheria should be reduced more rapidly, in view of the fact that a specific exists, which if given sufficiently early and in proper dosage, makes a fatal issue almost impossible. Failure to call a physician in time to administer the antitoxin effectively most frequently causes death from diphtheria, therefore the remedy must be educational. Pneumonia, taken collectively in all forms, is the greatest single factor in our death rate. Lobar pneumonia alone causes over 3000 deaths in Massachusetts annually, and ranks second only to tuberculosis among the communicable diseases as a cause of death. It should be placed on the list of diseases whose reporting is compulsory, as it is a dangerous communicable disease. The Department advises the manufacture and distribution of an antipneumococcic serum to physicians for use in Massachusetts. To combat syphilis effectually, facilities for the diagnosis thereof must be placed at the disposal of hospitals, dispensaries, health boards and physicians. Effective treatment should be made available, either free or at a reasonable price.

SECRETARIES FOR PHYSICIANS.

In the past secretaries to physicians have had no special qualifications for the particular services they are expected to render. They have been good stenographers, and if, perchance, their training has been ample in general science they have sooner or later picked up certain parts of the routine of the medical laboratory as well as the office work.

Two years ago Simmons College inquired of one hundred representative physicians whether a specialized training for a medical secretary should turn out a worker of special value for busy physicians and for hospitals and dispensaries, and their opinion was sought on what would constitute an ideal course. The responses demonstrated definitely that a secretarial and technical training should lead to a useful and special vocation for which a want was felt.

With the design of meeting this need, the suggestions given were carefully considered, and a course of training was adopted which included practically all of the technical secretarial work of stenography, typewriting, filing, cataloguing, and bookkeeping given to the regular secretaries, and, in addition, familiarity with the medical vocabulary, special medical German and abstracting, and courses in general chemistry, bacteriology, and applied routine medical laboratory work. This June the first class completing this special course will graduate and be eligible to demonstrate the special services they are qualified to render. It is confidently believed that the combination secretarial-technician will soon prove her merit to a new vocation, and that hospitals, clinics and specialists, who may have certain routine laboratory work, as urine or blood analysis, or the culturing or microscopic examination of pathologic specimens, will find her of exceptional value. By writing to Simmons College further information may be obtained regarding the training and the special qualities of the graduating students.

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MASSACHUSETTS FREE SCHOOL ON PUBLIC HEALTH.

THE Committee on Public Health of the Massachusetts Medical Society has determined upon the following topics for the various sessions of the Four Day Free School on Public Health, which it is to hold May 28-31st, in cooperation with State and Federal public health organizations:

Tuesday a.m.—Water and Sewage.

Tuesday p.m.—Public Health Laboratory.

Wednesday a.m.—Public Health Reports.

Wednesday p.m.—Specific Diseases.

Thursday p.m.—Industrial Hygiene.

Thursday evening.—Dr. Peter's lecture on Public Health Education in China, followed by a social hour.

Friday a.m.—Child Welfare.

Friday p.m.—Public Health Administration.

Some of the best-known men in public health work will address these sessions and at each session there will be an opportunity to ask questions regarding particular problems.

MEDICAL NOTES.

MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.—The next meeting of the American Public Health Association will be held in Chicago, October 14-17, 1918. The central theme of the meeting will be, "The Health of the Civil Population in War Time."

ANNUAL MEETING OF THE NATIONAL TUBERCULOSIS ASSOCIATION.—The National Tuberculosis Association, which is the newly incorporated successor of the National Association for the Study and Prevention of Tuberculosis, will hold its fourteenth annual meeting in Boston, June 6, 7, and 8, 1918, with headquarters at the Copley-Plaza Hotel. The meeting is to be divided into three sections: the Clinical Section, with Walter R. Steiner, M.D., of Hartford, Conn., as chairman; the Pathological Section, with M. C. Winternitz, M.D., of New Haven, Conn., as chairman; and the Sociological Section, with James Minnick, of Chicago, Ill., as chairman. Subjects dealing with all branches of anti-tuberculosis work are to be discussed.

LONDON DEATH RATES IN FEBRUARY.—Statistics recently published show that the total death rate of London in February was 16 per thousand inhabitants living. Among the several districts and boroughs, the highest rate was 27.9 in Shoreditch, a populous east side slum, and the lowest was 10.9, in Hampstead, an open suburb on the north.

OLEOMARGARINE IN PUBLIC INSTITUTIONS.—In a letter to the City's legislative representative at Albany, the New York City Commissioner of Health advocates the passage of a bill now before the legislature removing the restrictions which now prohibit the use of oleomargarine in institutions maintained wholly or in part by public moneys:

> "The Department of Health wishes to express its approval of the proposed measure on the ground that the excessive price which the City of New York has to pay for butter places an undue burden upon the taxpayers by prohibiting the City authorities from purchasing a wholesome and nutritious substitute therefor.
>
> The repeal of the prohibition against purchasing butterine and oleomargarine will vest discretionary power in the officials in charge

of institutions to determine whether or not it would be advisable to supply the inmates of public institutions with butter or a wholesome, nutritious substitute. Public officials should have such discretionary power, and the repeal of the present law would accrue to the benefit of the taxpayers without detriment to inmates of public institutions."

WAR NOTES.

American Surgical Team Wounded.—An announcement from the War Office in London on April 11 makes the following statement: "In the recent fighting and retirement along the western front, a certain number of medical units, such as casualty clearing stations, fell into the hands of the enemy. All the medical and nursing personnel of these units and the patients were safely evacuated, none of them falling into the hands of the enemy. It is regretted that in the process of evacuating the casualty clearing stations a number of casualties occurred among the medical and nursing personnel. This was inevitable as the units had to be cleared out at short notice under, in many cases, a heavy fire. A surgical team, which very generously had been sent to one of our casualty clearing stations by a Philadelphia hospital, was heavily bombed, and two officers and one nurse were wounded." It is believed that the two officers and the nurse mentioned in the London dispatch as wounded are Dr. Edward B. Hodge, Dr. Henry Dillard, Jr., and Miss Isabella Stambaugh, all attached to a base hospital unit sent out by a Philadelphia hospital. Word that they had been wounded was cabled to Philadelphia early in April by the medical director of the unit.

Typhoid Danger to Army Ended.—Official figures obtained at the office of the Surgeon-General show that there have been only eight deaths from typhoid fever in army camps in the United States since September 21, 1917. Dysentery has been stamped out for the first time since wars began. There has not been a single death from the cause, and there are no cases now under observation. The records today show that but a single suspected case of typhoid is under observation. The sick and death rates from this disease are so small as to be considered negligible. Reports by officers of the Surgeon-General's office show that during the Spanish-American war the death rate from typhoid was 8.79 per thousand. If that rate was effective today, the American armies, on the basis of 1,500,000 men in the service, would have lost 13,000 to 15,000 men from this disease alone.

A campaign is now being conducted to prevent the outbreak of an epidemic of dysentery in the camps during the summer, and the officials are confident that it can be held in check. It is believed that the danger of a large number of deaths from typhoid has been definitely averted as a result of the advanced methods adopted. Here are the annual death rates from special diseases per thousand for the six months ending March 8, 1918: pneumonia, 5.2; meningitis (all kinds), 1.04; measles, 0.096; scarlet fever, 0.049; tuberculosis, 0.15; diphtheria, 0.042. The death rate from typhoid is withheld because its publication would make known the number of men who have been inducted into the military service.

War Relief Funds.—On April 15 the totals of the principal war relief funds reached the following amounts:

Halifax Fund	$698,895.25
Belgian Fund	667,910.08
French Wounded Fund	346,955.42
Armenian-Syrian Fund	300,823.03
Italian Fund	161,383.60
French Orphanage Fund	165,851.48
Polish Fund	105,626.52
Home Service Fund	13,718.00

Review of War Surgery and Medicine.—In the Review of War Surgery and Medicine for April, issued from the office of the Surgeon-General, are to be found several very instructive articles on subjects important in surgical and medical practice at the front. Such subjects as practical points on use of immobilization in war surgery, dealing with proper construction of splints and use of traction; the treatment of wounds, involving a discussion of flavine as an antiseptic; the use of soap solution for similar purposes; and the value of excision and primary suture are touched upon. Further articles describe a surgical treatment of war wounds of the abdomen, wounds of the joints, repair of face and jaw injuries. There are abstracts from otolaryngological literature, and from ophthalmological literature, laboratory studies of pneumonia and meningitis, and short reviews on the subjects of vaccines and parasites. Copies of this interesting manual may be had for ten cents each, by addressing the Government Printing Office, Washington, D.C., and it is recommended that medical officers thus secure copies for themselves.

A NEW AMERICAN HOSPITAL IN ENGLAND.—The American Ambassador to England on March 26 opened the American Red Cross Hospital No. 24 (the fifth to be opened in England), at 24 Kensington Palace Gardens. This hospital has been presented and equipped and will be maintained by Mr. and Mrs. A. Chester Beatty, of New York.

The hospital is auxiliary to the Military Orthopedic Hospital at Shepherd's Bush, and for the present will accommodate British and Dominion officers until it is needed for Americans. The medical and nursing staffs are entirely American. There are eight wards, and accommodation for 36 orthopedic cases. The color scheme of eider downs and screens is pale blue in some wards, golden brown in others, and rose in the remainder, and the walls are oyster white. The wards bear the names of famous Americans—George Washington, Stonewall Jackson, Robert E. Lee, U. S. Grant, Abraham Lincoln, Alexander Hamilton, Thomas Jefferson, and Benjamin Franklin.

APPOINTMENT IN THE MEDICAL RESERVE CORPS.—Dr. William K. S. Thomas, F.A.C.S., a practising physician of Cambridge, Mass., has been appointed a captain in the Medical Reserve Corps. Dr. Thomas was born in Duxbury, graduated from Harvard in 1901, and from the Boston University School of Medicine in 1903. He was then assigned to duty in the Massachusetts Homeopathic Hospital. Capt. Thomas has been assigned to the hospital unit at Camp Dix, N. J., and he expects to be sent to France in May.

ARMY HEALTH GOOD.—Health of all troops in the United States continues good, the War Department announces in a report covering the week ending April 12. Both hospital admission and death rates were lower than in the preceding week. The highest rates were at National Army cantonments, probably because of the mobilization of large numbers of drafted men. The total number of deaths at all camps was 285, as against 290 the week before. Pneumonia continues in all the larger Northern camps, with some increase in the number of new cases reported. No other disease is classed as generally prevalent.

AMERICAN MEDICAL OFFICER CITED FOR CROSS.—Report from Army Headquarters in France on April 19 states that Lieut. Theodore Higgins Sweetser of the United States Army medical service was recommended for the British military cross, following his official citation "for conspicuous gallantry and devotion to duty near Passchaendaele (in Flanders) on March 13, 1918."

The citation continues: "When the headquarters of another battalion received a direct hit from a gas shell all occupants, including the medical officer attached to the battalion, suffered from the effects of gas, Lieutenant Sweetser rendered valuable and gallant assistance to more than forty cases, and continued to do so when his two non-commissioned officers succumbed, although suffering himself at the time.

Lieutenant Sweetser also rendered valuable and most gallant assistance to a party of soldiers, the entrance of whose dugout had been struck by a gas shell. He roused forty men, forcing tubes and respirators into their mouths and applying the gas mask clips to their noses. But for his prompt action, a large number of men would have succumbed."

RED CROSS SENDS AID TO THE HOLY LAND.—Report from Washington has it that the Red Cross has made comprehensive plans for the relief of the people of the Holy Land, who for centuries have suffered under Turkish rule and who recently were rescued through the British conquest of Jerusalem. "For some time," says the announcement, "the American Red Cross has had under consideration the best way to relieve conditions in Palestine. All reports indicate that they are peculiarly deplorable. Famine and disease have enacted heavy toll. Typhoid and cholera were and are epidemic. In no part of the world into which the war has been carried is the condition of the civilian population worse than in the land of the Bible.

Dr. E. St. John Ward of Springfield, Mass., professor of surgery in the American University at Beirut, Syria, in an exhaustive report submitted a plan of relief. The War Council appropriated $390,000 as a beginning. The work is to be done in connection with the British Syria and Palestine Relief and the American Armenian and Syrian Relief Committee, which already have been doing what they could.

The initial work of the Red Cross Commission will establish in Palestine four medical units to combat typhus, cholera and other diseases. A fully equipped hospital will be established at a point to be selected. Dispensaries and village work will be established in the less populated districts. The lay assistants attached to the medical unit will devote their time to general civilian relief, such as the distribution of clothing and food, and the rehabilitation and reconstruction of devastated areas. Appropriations so far made by the Red Cross are intended to cover a period of six months."

Others of the commission besides Dr. Finley include Dr. Ward, Jesse K. Marden, Boston; Giles S. Pease, Worcester, Mass.; A. Edward Kelsey, Portsmouth, R. I.; and Jacob Norman, Malden, Mass.

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending April 20, 1918, the number of deaths reported was 286, against 255 last year, with a rate of 19.02, against 17.22 last year. There were 43 deaths under one year of age, against 35 last year.

The number of cases of principal reportable diseases were: diphtheria, 71; scarlet fever, 37; measles, 326; whooping cough, 61; tuberculosis, 62.

Included in the above were the following cases of non-residents: diphtheria, 20; scarlet fever, 9; measles, 1; tuberculosis, 24.

Total deaths from these diseases were: diphtheria, 6; measles, 4; whooping cough, 4; tuberculosis, 27.

Included in the above were the following non-residents: measles, 1.

APPOINTMENT OF A NEW MEDICAL EXAMINER.—Dr. Vernon C. Stewart has been named recently by Governor McCall as medical examiner for the Woburn district, to succeed Dr. William H. Keleher, whose term soon expires. Dr. Stewart was born in St. John, N.B., graduated from the High School at Canton, Ill., and from Columbia College of Physicians and Surgeons at Columbia. He has been a resident of Woburn for fourteen years, has been chairman of the local board of health and school physician. Dr. Stewart is a member of the Massachusetts Medical Society, the Middlesex East District Medical Association, and the Woburn Medical Society.

EXAMINATION OF DOMESTIC WATER SUPPLIES.—The Public Health Bulletin for February, 1918, makes the following statement in regard to examination of domestic water supplies during the past year:

In July, 1917, the State Department of Health of Massachusetts, acting under the authority of a resolve passed by the Legislature earlier in the year, announced that it would undertake the examination and analysis of well and spring waters used as a source of domestic supply.

During the balance of the year, 69 requests for such analyses were received from various parts of the State.

The majority of supplies for which requests were received have been inspected, and samples taken. Owing to a shortage of engineers, it has thus far been impracticable to visit all the places requested. These will receive attention later.

A study of the inspection reports and analyses made discloses conditions which may well lead every householder dependent upon a private domestic water supply to consider seriously the possibility of its pollution. This conclusion is reasonable, even though the number of supplies examined was comparatively small, since they were taken in 27 different cities and towns, from all parts of the State, showing that the conditions noted were not confined to any particular locality.

About three-quarters of the supplies were shown to be badly polluted. Factors which contributed to such pollution were near-by privies and cesspools, sink drains running near the water supply, the close proximity of barnyards and manure piles, pollution from surface drainage.

The only excuse for many of the conditions noted would seem to be that purity of water supply and its relation to healthfulness had been wholly disregarded for the sake of convenience and accessibility.

The work thus far carried out would seem to indicate that in some communities, owing to underlying ledge, character of soils, and proximity of buildings, the securing of a safe domestic water supply is questionable or impossible; that in any case the location of the cesspool or privy and other sources of pollution should be carefully considered in their relation to possible pollution of domestic water supplies.

The general elimination of polluted supplies such as have been found during these examinations would diminish rural typhoid, and, to judge from experience, would also tend to lessen the amount of sickness in general among the users of such polluted supplies.

Annual Meeting of the Massachusetts Homeopathic Society.—Clinical demonstrations were a feature of the seventy-eighth annual meeting of the Massachusetts Homeopathic Society, held recently at the Homeopathic Hospital. Hon. Charles P. Batchelder, formerly of the Philippines, gave an address on "Problems of the Far East." The 200 members attending the meeting dined at Young's Hotel in the evening. The following-named officers were elected: Dr. William H. Watters, president; Dr. Wesley T. Lee, first vice-president; Dr. George N. Lapham, second vice-president; Dr. Edward S. Calderwood, recording secretary; Dr. Benjamin T. Loring, corresponding secretary; Dr. Thomas M. Strong, treasurer; and Dr. Alonzo G. Howard, chairman of the board of censors.

Meeting of the Anti-Tuberculosis League. Dr. Vincent Y. Bowditch, president of the Massachusetts Anti-Tuberculosis League, in opening the annual meeting of the society, held recently at 3 Joy Street, stated that, though hampered by a reduction of active workers on account of the war, the League had done its best and had made material progress. The speaker referred to the recently completed "workshop and recreation building" at Rutland, under the auspices of the Rutland Private Sanatorium Association for the benefit of patients who are obliged to live in Rutland,—a scheme which marks an important advance in the methods of meeting the tuberculosis question. Miss Mary A. Abel, educational assistant of the community health demonstration at Framingham, read a paper on "Complete Community Organization for Health." Prof. Curtis M. Hilliard of Simmons College, in a talk on "Relative Values in Anti-Tuberculosis Work," declared that the most important part of the work of the public health nurse is that of education.

At the business meeting the following officers were elected: president, Dr. Vincent Y. Bowditch, Boston; vice-presidents, Dr. Carl A. Allen, Holyoke; Miss Louisa P. Loring, Prides Crossing; Dr. Walter P. Bowers, Clinton; Dr. George L. Schadt, Springfield; Rev. William B. Geoghegan, New Bedford; Dr. Arthur K. Stone, Boston; Dr. Eugene R. Kelley, Boston; Mr. Charles O. Tyler, Abington; secretary, Seymour H. Stone; acting secretary, Miss Ethel M. Spofford, Boston; treasurer, Arthur Drinkwater; acting treasurer, Romney Spring, Boston.

Mrs. Anna M. Staebler, secretary of the Massachusetts Committee on Health in Industry, read a report on the conservation of man power. Miss Bernice W. Billings described follow-up work in the small towns of Massachusetts. Her paper was discussed by Miss Mary Beard of Boston, and by Dr. Vanderpoel Adriance of Williamstown, Mass. Dr. Charles J. Hatfield, executive secretary of the national association, gave statistics regarding "the terrible increase in the amount of tuberculosis in the warring countries," and described plans now in operation for combating the disease at home and abroad. A full account of the proceedings at this meeting will be published in a later issue of the Journal.

Annual Report of the Consumptives' Hospital Department.—The Annual Report of the Consumptives' Hospital Department of Boston was submitted recently for the year ending January 31, 1918. In common with all hospitals throughout the country, the Boston Consumptives' Hospital has felt the effects of the war through deficiencies in the staff. During the year a closer affiliation with local medical schools has been brought about, and definite arrangements have been made with the Harvard Medical School and the Tufts Medical School whereby advanced students in medicine are admitted to the wards in small groups under strict supervision, to have the advantage of the splendid clinical material there. Plans for work for patients of the Hospital are now going forward, and an attempt is being made to establish a night clinic for consumptive men who are able to continue their regular occupations. A new x-ray equipment has been set up, and a small chemical laboratory equipped for research work on renal function. There is great need for a nurses' home, as at present nurses are housed in very crowded conditions in the building intended for employees other than nurses. Caring for the child is the most important thing in the crusade against tuberculosis, for it is necessary to make the resistance so strong against the disease that it will win in the fight. This means proper and sufficient care of the child, and especially the child of a tuberculous family. While the child is still surrounded by the opportunity for constant infection, and living in poverty, the chance of sufficiently strengthening the resistance is exceedingly poor. Much has been done elsewhere by removing these children for some time to country homes, sanatoria and preventoria. Boston has no such opportunity for her children, therefore the trustees call attention to the great need for, and the economic value of, such a home, and trust that it will be provided. The war will probably lead to a demand for beds for consumptives much in excess of the present number. This has been the experience of all the countries at war. The trustees believe that the present hospital can be very much increased in bed capacity at no great cost.

Hospital Bequests.—By the will of Timothy Smith, a well-known merchant of Roxbury, the following hospitals receive bequests: City Hospital, Brockton, $5000; Boston Nursery for Blind Babies, $5000; Children's Hospital, $1000; Boston Floating Hospital, $3000; Talitha Cumi Maternity Home, $2000; Cullis Consumptive Home, $5000; Perkins Institute for the Blind, $2000; Boston Emergency and General Hospital, $5000; Roxbury Homeopathic Dispensary, $3000; Massachusetts Homeopathic Hospital, for a free bed, $5000.

By the will of Susan E. Tyler of Lowell, Mass., the Lowell General Hospital receives a bequest of $1000.

NEW ENGLAND NOTES.

Manchester Physicians Missing.—Recent casualty lists report that two physicians of Manchester, N. H., are missing. Lieut. Benjamin R. Burpee enlisted in the Medical Corps soon after the United States entered the war, and was commissioned lieutenant in the M.O.R.C. After going abroad he was assigned to duty with the British forces, with whom he has been in active service up to the time of the recent German offensive. Lieut. Samuel Miller was also assigned to the British forces, and after a short service at the base hospital went to the front line at his own request.

The Massachusetts Medical Society.

NOTES FROM THE DISTRICT SOCIETIES.

District Correspondents.

Berkshire, A. P. Merrill, M.D., Pittsfield.
Bristol North, Arthur R. Crandell, M.D., Taunton.
Bristol South, Edwin D. Gardner, M.D., New Bedford.
Essex North, T. N. Stone, M.D., Haverhill.
Essex South, H. P. Bennett, M.D., Lynn.
Hampden, Laurence D. Chapin, M.D., Springfield.
Hampshire, E. E. Thomas, M.D., Northampton.
Middlesex South, William C. Hanson, M.D., Belmont.
Norfolk South, Daniel B. Reardon, M.D., Quincy.
Plymouth, Alfred C. Smith, M.D., Brockton.

Hampden District Medical Society.—The following members have so far (April 15, 1918) entered the Army and Navy:

W. J. Bostick, J. M. Birnie, H. F. Buddington, H. F. Byrnes, E. H. Burke, O. R. Blair, P. M. Cort, J. M. Claffy, E. B. Corcoran, W. A. R. Chapin, E. L. Davis, E. C. Dubois, J. H. C. Gallagher, A. H. Galvin, E. A. Gates, G. D. Henderson, D. E. Harriman, M. B. Hodskins, P. Kilroy, C. F. Lynch, F. D. LaRochelle, P. M. Moriarty, V. S. Merritt, J. M. Maloney, L. E. Mannix, W. E. Mulcahy, H. C. Martin, J. H. Quinn, R. A. Rochford, S. D. Rumrill, J. F. Streeter, M. J. Stoddard, G. L. Schadt, J. M. Tracy, W. R. Weiser.

L. D. Chapin,
District Correspondent.

Springfield Academy of Medicine.—The annual meeting of the Springfield Academy of Medicine was held on Tuesday evening, April 9, 1918. Officers for 1918-19 were elected as follows: president, Dr. A. O. Squier; vice-presidents, Drs. W. C. Leary and E. H. Guild; secretary, Dr. L. D. Chapin; treasurer, Dr. A. G. Rice; directors (additional), Drs. F. B. Sweet, R. S. Benner, E. A. Bates, H. W. Van Allen, R. B. Ober, G. L. Schadt, T. S. Bacon, J. M. Birnie, J. B. Comins, W. R. Weiser; censors, Drs. F. A. Woods, H. C. Martin, E. L. Davis, R. A. Kinloch, H. L. Smith.

The names of thirty-seven members who have entered the Army and Navy during the past year were read.

Dr. Paul P. Swett of Hartford read a very interesting paper on "Recent Advances in Bone Surgery," illustrated with lantern slides.

An open meeting was held at the Academy on Tuesday evening, April 16, at which Dr.

Willard Bartlett of St. Louis kept a large attendance enthusiastic until a late hour. His subject was "Certain Phases of the After-Treatment of Surgical Patients."

L. D. Chapin,
Correspondent, Hampden District.

Correspondence.

A LETTER FROM THE TRENCHES.

France, March 12, 1918.

Mr. Editor:—

I am very fortunate to be with one of the first infantry regiments to face the Germans, and to be the battalion surgeon of the battalion that helped to go over and get a few German prisoners. I had the pleasure of dressing a wounded German prisoner, if not the first in our division, then nearly the first, I think. I was in the front line post for three weeks during which time there were five medical reliefs, and all were royal, good and courteous gentlemen. I have fallen into luck wherever I have been, both as to opportunity of service and the personnel that I have met. Even now I have a most beautiful station, not on the front line, but near it,—near enough for me, having had two or more shells landed over us about noon, a piece of one of them coming within a few feet of me. It is spring here, with skylarks singing in early morning and dandelions showing their little circles of yellow on the sides of and around shell holes. Indeed, it is the first time since last October that I have been able to see any reason for seeing this sunny France. It is beautiful even now that the terrible blast of war has torn every tree and every human structure to pieces. What must it have been before? Certainly "la belle France."

With kindest regards, I am,

Sincerely yours,
Frank Piper, M.R.C.

NOTICE.

UNITED STATES CIVIL SERVICE EXAMINATION.

Acting Assistant Surgeon (Female), $1,800-$2,500.

Public Health Service, May 21, 1918.

The United States Civil Service Commission announces an open competitive examination for acting assistant surgeon, for women only. Vacancies in the Public Health Service, at salaries ranging from $1,800 to $2,500 a year, and in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Certification to fill the higher-salaried positions will be made from those attaining the highest average percentages in the examination.

In filling vacancies in this position certification will be made of the highest eligibles residing nearest the vicinity of the place at which the appointee is to be employed, except that upon the request of the Department certification will be made of the highest eligibles on the register for the entire country who have expressed willingness to accept appointment where the vacancy exists.

Appointees to certain positions will be expected to make physical examination of female workers and immigrants, conduct sanitary surveys, and perform other duties of routine character.

Applicants must have graduated from a medical school of recognized standing, and must show that they have had experience which has rendered them proficient in infant welfare work, school and community hygiene, and analogous problems.

Applicants must have reached their twenty-first but not their forty-fifth birthday on the date of the examination.

Applicants must submit with their applications their photographs, taken within two years. Tintypes or proofs will not be accepted.

The medical certificate in the application form must be executed by an officer of the Public Health Service, except that when this requirement would work a hardship upon an applicant because of her distance from such officer she may have the certificate executed by any physician. In this event, however, she may be required to pass a physical examination before an officer of the Public Health Service before appointment.

This examination is open to all female citizens of the United States who meet the requirements.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Honolulu, Hawaii; Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Cal.; Old Customhouse, St. Louis, Mo.; Administration Building, Balboa Heights, Canal Zone; or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

Applications should be properly executed, excluding the county officer's certificate, and must be filed with the Civil Service Commission, Washington, D. C., prior to the hour of closing business on May 21, 1918.

SOCIETY NOTICES.

Essex North District Medical Society.—The Annual Meeting of this Society will be held Wednesday, May 1, 1918, at Y.M.C.A., 40 Lawrence Street, Lawrence. (Tel. 1260.)

Dinner will be served at 12.30 sharp.

The business meeting and papers will follow immediately. The Vice-President has arranged the following interesting papers:

"Control and Cure of Cancer"
by Edw. Reynolds, M.D., of Boston (40 minutes).
"German Lies and German Spies"
by Rev. J. Franklin Babb, of Haverhill (30 minutes).

The next meeting of the Censors will be held at Hotel Bartlett, Haverhill, Thursday, May 2, 1918, at 2 p.m. sharp. Candidates should bring diploma.

T. R. Healy, M.D., *President*,
J. Forrest Burnham, M.D., *Secretary.*

Norfolk South District Medical Society.—Annual Meeting at United States Hotel, Boston, Thursday, May 2, 1918, at 11.30 a.m.

Election of officers.

Annual address by the President.

Censors will meet at 2 p.m. to examine candidates for fellowship. Candidates should make application to the Secretary a week before examination.

F. H. Merriam, M.D., *Secretary.*

The Censors of the Essex South District will meet at the new Salem Hospital Thursday, May 2, 3.30 p.m., for the examination of candidates for admission to the Society. All members throughout the District are requested to bring this notice to the attention of non-members, who can obtain further information from the secretary.

H. P. Bennett, M.D., *Secretary.*

The Boston Medical and Surgical Journal

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MENINGOCOCCUS CARRIERS: PRELIMINARY REPORT FROM FIRST NAVAL DISTRICT.

By Assistant Surgeon William R. Redden, U.S.N.R.F., Naval Hospital, Chelsea, Mass.

The detection, isolation and treatment of meningococcus carriers, both in army and navy units, continues to be a problem, in spite of the extensive work already done. Hence it seems quite worth while to present additional data, especially since it comes from a district previously unreported. Moreover, the relation of carriers to contacts and non-contacts, the influence of hygienic conditions and occupation, as well as the matter of temporary and permanent carriers, etc., seems to be worthy of consideration. Therefore, besides the contact groups there are included six control groups of non-contacts.

Before giving the results of the work, a brief outline of the methods employed will be enumerated.

Media. Fresh plates are made from 1.5% beef infusion agar, to which is added 1.0% dextrose and a small amount of fresh-laked defibrinated sheep's blood.

Swabs and Swabbing. At first, curved wooden throat sticks were used, but these have been replaced by West tubes containing wire swabs. Formerly the posterior pharyngeal wall was swabbed, then the plate smeared with the convex surface of the cotton. Later, the tip of the wooden throat stick was thrust up toward the roof of the naso-pharynx, and then the cotton tip alone was touched to the plate. However, in swabbing the contacts reported here the West tube was used because it slipped into the naso-pharynx more readily, it caused less gagging and discomfort, but more especially because it gave a better direction to the wire swab as the latter was pushed toward the roof of the naso-pharynx. The swab is not drawn into the tube again; first, because it is not necessary since there is little danger of contaminating the tip, if the tube is properly withdrawn; and, second, because drawing the swab into the tube scrapes whatever secretions that may be on the sides of the cotton onto the tip. After the tip of the swab has touched the region of the roof of the naso-pharynx, the tube is withdrawn quickly, the tip is touched to the culture media, and the deposit carefully distributed over the whole surface by means of a platinum wire.

Care of Cultures. The cultures thus taken and planted immediately are transported to the laboratory in an insulated wooden box which is heated by a copper tank containing hot water, and has a capacity of 100 plates. This outfit was designed by Assistant Surgeon Keegan, U.S.N.R.F., of the Naval Hospital, Chelsea. Usually cultures are in the incubator within an hour of the time when taken.

Examination of Plates. A preliminary examination of plates is made at the end of 18 to 24 hours' incubation, and at this time all plates containing no suspicious colonies are discarded. Experience here has shown that about half the number of plates taken on a group of men in close contact with a known case of meningitis can be put aside as negative. It has also indicated that more than this number can be excluded in like manner when plates from groups of non-contacts are examined. This, of course, has no reference to groups already isolated as carriers. From the remaining plates suspicious colonies are then treated as follows:

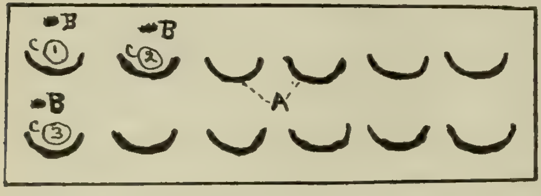

FIG. 1.—*A*, Crescents made with a wax pencil. These prevent serum from spreading and from running down the slide when the latter is held up for a better view of agglutinations; *B*, Material from a single suspected colony; *C1*, a drop of 1/10 dilution, Normal Horse Serum; *C2*, a drop of 1/50 dilution Polyvalent Anti-meningitis Serum; *C3*, a drop of 1/10 dilution Polyvalent Anti-meningitis serum.

Preliminary Agglutination Tests. For carrying out these tests on a slide, the latter is prepared with a wax pencil, as indicated in Fig. 1. After the culture material and sera are placed as in Fig. 1, a platinum wire is touched to the normal horse serum diluted 1/10 (c^1) and an emulsion is made with the serum thus obtained and the culture material above it. After a smooth emulsion is thus made, the remainder of serum c^1 is mixed with it, and the whole stirred from time to time. In like manner the immune sera c^2 and c^3 are mixed with the respective bits of culture material. Some suspicious colonies fail to rub-up into a smooth emulsion in the preliminary mixing of culture material, but break up immediately into coarse granules. Since meningococcus colonies never break up in this way, such colonies are considered negative.

For picking colonies, making sub-cultures, and for repeatedly stirring the three suspensions on the slide, a rod having a platinum needle and two platinum loops, as shown in Fig. 2, has proved convenient, because all three wires can be flamed at once and no further sterilization is necessary until another colony is to be studied.

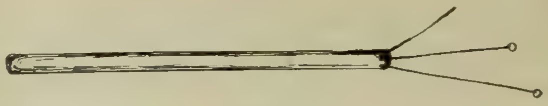

FIG. 2.

At the time a suspicious colony is picked a short streak is made with the needle on the same plate to give a sub-culture for future use.

The results of the macroscopic agglutination tests made as above indicated group themselves as follows:

	NORMAL HORSE SERUM 1/10	ANTI-MENINGITIS SERUM 1/10	ANTI-MENINGITIS SERUM 1/50
1.	+	+	—
2.	+	+	+
3.	—	+	+
4.	—	+	—

No. 1 is excluded as being negative.

No. 2 is examined as follows: A second colony similar to the first is further studied in exactly the same way, except that a fourth suspension is introduced, namely, a salt solution control without serum. Usually this excludes the colony as being agglutinable in salt solution. However, under these circumstances a colony may not agglutinate in salt solution, so higher dilutions of normal horse serum are introduced until it is shown that the organism is either agglutinating in horse serum as such, or only up to a certain point, and then specifically in anti-meningococcus serum. Fortunately, this last type is not common.

Nos. 3 and 4 constitute presumptive positives.

When an organism agglutinates, as in Nos. 3 or 4, or specifically in No. 2, smears are made from the 1/10 anti-meningococcus serum agglutinated suspensions, and later the Gram stain is applied. Such smears show the agglutination microscopically, the character of the organisms morphologically and their staining quality.

These studies show that there is a marked difference in the rapidity of the agglutination reaction both in control cultures and in "unknowns." At times slight warming hastens the process.

I have stated that about half of the original plates taken on contacts show no suspicious colonies, hence can be excluded from further consideration. In addition to this, about half of the remaining plates can be excluded by failure of colonies to agglutinate specifically in a high titre polyvalent anti-meningococcus serum. Hence, within about 24 hours of the swabbing time, approximately 70% of the contact suspects can be released from temporary quarantine. All plates are then returned to the incubator for a second 24-hour period. This has proved to be essential in order to rule out as far as possible the chromogenic Groups I, II, and III. This process usually eliminates 5 or 6% more of the original group.

Gross Agglutinations in Tubes. From the sub-cultures made at the end of the first 24-hour period, transplants are made for gross agglutination in tubes at 55° C. for 12 hours, and then in the ice box for 12 hours. Experience has shown that results from this method follow so closely the slide method that they rarely change the positive report made on the basis of the latter.

Briefly, then, all plates which show no suspicious colonies are discarded. All those having suspicious colonies which do not rub-up into a smooth emulsion in the sera but, from the start, form a granular suspension, are eliminated. All colonies which move *en masse* across the media when touched with the needle, and those showing marked chromogenesis, are excluded. And, finally, all colonies which agglutinate in salt solution, or non-specifically in normal horse serum, are discarded, or set aside for further study. Then there is left a definite group of colonies which agglutinate specifically in anti-meningococcus serum. Such are reported as positive.

The basis of judgment as to chromogenesis, general appearance of colonies, etc., lies in a careful study of stock strains of meningococci, para meningococci, and intermediates Nos. 6, 10, 30, 32, 62, 63, and 81, transplanted to the media used for isolation, together with a number of strains recently isolated from cases of cerebrospinal fever. Some of the stock strains tend to show a yellow tinge after 48 hours' growth, but not so marked as in the chromogenic group.

Control transplants of known meningococcus cultures are made on each batch of plates used and incubated during the same time as the unknown cultures in order to give fresh cultures for testing out the sera to be used, and to give a fair idea of the appearance of colonies on the particular batch of media used.

With the above method over 3000 plates have been examined during a period of about seven weeks. From this number over 300 positive cultures from different throats have been studied. Of this group of positives, 40% agglutinated specifically on the slide in 1/10 anti-meningococcus serum alone, and about 60% as high as the 1/50 dilution.

Gross agglutinations in tubes done on a hundred of the above group showed results indicated by Table I. The same lot of sera used for agglutinations on slides was used in this series.

Table I.

Number of Cultures	Number of Cultures Agglutinated in Salt Sol. Control	Number of Cultures Agglutinated in the Dilutions of Anti-meningococcus Serum Indicated						Number of Cultures Agglutinated in Normal Horse Serum 1/50 Control
		1/50	1/100	1/200	1/400	1/800	1/1600	
100	0	1	20	25	32	16	6	0

The agglutination titre of the anti-meningococcus serum used in the above gross agglutinations was checked up by the use of stock strains of meningococci, Nos. 6, 30, 63, 10, 32, 62, 81. Frequently the above agglutinations were confirmed by second and third cultures from the same carrier.

In comparing agglutinations in the 1/10 and 1/50 anti-meningococcus serum on the slide with the gross agglutinations in tubes, it appears that colonies agglutinating in the 1/50 anti-meningococcus serum on the slide, agglutinate in higher dilutions in the tubes than do the 1/10 anti-meningococcus serum agglutinators. However, this is not always the case.

Now turning to the carriers themselves, some interesting facts have come to light from frequent and repeated examinations. For convenience, only the first hundred carriers isolated will be considered. Table II shows the number and percentage of positive cultures found from such a group on repeated examinations at five-day intervals.

Table II.

No. of Carriers	No. and Percentage of Positives on Repeated Examinations				
	2nd exam.	3rd exam.	4th exam.	5th exam.	6th exam.
100	57	59	55	52	34

One will see at a glance that the above figures do not refer directly to successive cultures on any one carrier.

For the purpose of illustrating how the persistence of successive positive cultures may occur in a group of carriers, Table III is introduced.

TABLE III.

No. of Carriers	No. and Percentage of Carriers Having Successive Positive Cultures at 5-Day Intervals				
	2 positives	3 positives	4 positives	5 positives	6 positives
100	57	45	28	22	13

One would expect from the above figures about half the isolated carriers might be released from quarantine at the end of the required 21 days minimal period. However, as a matter of fact, only 16 were ready for discharge within that time. The reason for this will be demonstrated by Table IV, which exemplifies the so-called "intermittent carrier" condition. In order to make the situation clearer, the examples are taken at random, from the isolated group, rather than from only the first hundred.

TABLE IV.

RECORD OF THE POSITIVE AND NEGATIVE CULTURES FOUND ON CARRIERS CULTURED AT 5-DAY INTERVALS.

Patient's No.	Examination										
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th
7	+	+	+	+	+	+	+	+	+	—	—
9	+	+	+	—	—	—	+	—	—	—	—
12	+	—	—	—	+	+	—	+	—	—	—
27	+	—	—	+	—	—	—	—			
37	+	+	+	—	+	—	+	+	—	—	+
60	+	—	+	+	—	+	—	—	—	—	
61	+	—	—	—	—						

No. 7 represents a group of four permanent carriers. No. 61 represents a group of sixteen or more who showed no positive cultures after isolation. Nos. 9 and 12 represent a group of six from whom a positive culture was obtained after three successive negatives. Nos. 37 and 60 represent a group of forty-nine who showed positive cultures after one or more negatives. Experience here, as elsewhere, would indicate that meningococcus carriers may be classified as permanent or persistent, intermittent, and temporary. It may be that the temporary group is only a phase of the intermittent group. Furthermore, it is possible that the intermittent group represents men who have become reinfected from other carriers, rather than men who are in fact carriers, but whose cultures fail to show up positive on some examinations. In this connection it seems quite worth while to note the fact that at one time a carrier may show a pure culture on one examination and on the next show only one or two colonies along with numerous other organisms, then on a third or fourth examination a second pure culture of meningococci.

Treatment. Various measures have been tried to clear up the carriers. These include a variety of sprays and also steaming. But results do not seem to indicate consistent, if any, success. Out of about half of the isolated carriers who received no treatment, a much larger number has been discharged than is true of those treated. Moreover, out of a group of twenty who had shown four successive positive cultures, ten were treated during a ten-day period, and ten were untreated. An equal number from each group showed negatives after two cultures taken during that period. Treatment was suspended for 24 hours before each culture was taken.

It is interesting to note that during the past two weeks of warm weather a sharp decline in the number of positive cultures from the carriers in quarantine has taken place.

Discussion. I certainly do not believe the method of slide agglutination, supplemented by gross agglutination in tubes, is infallible, since I have found some definite chromogenic organisms which agglutinate as high as 1/200 in anti-meningococcus serum and not in either 1/50 normal horse serum or physiological salt solution. But it seems to me if one familiarizes himself with the cultural characteristics of a number of strains of meningococci and uses discretion in picking suspicious colonies, and in making up a preliminary suspension on the slide before allowing the agglutination to take place; if, furthermore, one allows for a second reading of plates, at the end of a 48-hour incubation period, to rule out markedly chromogenic organisms, that this method should be sufficient to isolate carriers. All the 100 strains mentioned in the above tables were cultured and sub-cultured over two to three weeks, and none showed growth at room temperature on the media used for isolation. Many were transferred to plain agar, where they grew poorly or not at all, even at 37° C. If, in addition then, one puts proper emphasis on the microscopic appearance of the smears and on the lack of growth of the organism at room temperature on proper media, just so much more evidence is added to strengthen this belief.

Epidemiology. We now come to the consideration of groups of contacts and non-contacts in their relation to the number and percentage of positive meningococcus carriers. Table V presents an outline of the facts. This is followed by a discussion of each one of the groups.

Table V. (Part One).

Date	Group	Place	No. of Cultures	No. of Carriers	Per Cent.	Remarks
Jan. 28	1	Training ship	45	4	8—%	Not close contacts
Feb. 1-5	2	A cruiser	8	2	29%	Close contacts
	3	Receiving ship. A pier	135	12	8—%	Not close contacts
Feb. 5-11	4	Receiving ship. A pier	176	41	22—%	Close contacts
Feb. 7	5	A hospital. One case isolated in room, others on open ward. Nurses, doctors and lab. workers.	32	2	6—%	No special contacts except doctors and nurses in immediate attendance
Feb. 19-21	6	A collier	157	28	17—%	Moderately close contacts
Feb. 23-24	7	A cruiser	376	31	21%	Whole ship taken because of second case
Feb. 26	8	A cruiser	37	13	35—%	Well chosen contacts
Feb. 27	9	Guard on oiler	8	1	12—%	Close contacts under ideal hygienic conditions
Mar. 7	10	Receiving ship. A pier	20	5	25%	Close contacts
Mar. 20	11	Gov't school contacts	75	9	11—%	Company from which a case was taken
Mar. 21	12	Battleship	50	8	16—%	Moderately well chosen
Mar. 27	13	Receiving ship. A pier	72	17	20%	Close contacts

Table V. (Part Two).

Non-Contacts. The Following Groups Were Taken as Controls.

Date	Group	Place	No. of Cultures	No. of Carriers	Per Cent.	Remarks
Mar. 4	A	Hingham control non-contacts	100	9	9%	Recruits living under good conditions
Mar. 9	B	A receiving ship, a pier. Non-contacts as far as known.	100	26	26%	Recruits living in crowded quarters
Mar. 13	C	Group of college women, non-contacts	100	1	1%	Students living at home or in small groups
Mar. 11	D	First- and second-year medical students	100	1	1%	Students living at home or in boarding places
Mar. 12	E	Group of infants	45	1	.2%	Living in an ideal hospital
Mar. 28	F	Gov't school	79	8	9%	Recruits attending a government school, living in barracks, under good conditions.

A BRIEF EXPLANATION OF THE GROUPS RECORDED IN TABLE V.

Group 1. Represents part of a ship's crew. The patient was a carpenter detailed to work on the ship, but aside from working hours had nothing to do with the crew. He spent two or three nights a week at home and the other nights at two different stations. He took his meals at three or four places. For these reasons I do not consider this a "close contact" group, but only moderately close at best.

45 cultures—4 positive = 8%.

Group 2. Is made up of eight men who were intimately associated with the patient at mess, in sleeping quarters and at work. One of the carriers was the intimate friend of the patient, hence these are called "close contacts."

8 cultures—2 positives = 29%.

Group 3. Is really made up of two groups, one from a cooking school of which the patient was a member for a short time. The other group was taken at random from a large number of men who in all probability never associated with the patient. However, this patient gave positive meningococcus cultures from the naso-pharynx on repeated examination. The organisms agglutinated in polyvalent anti-meningitis serum beyond a 1/1600 dilution. It is interesting to note that the patient was sent to the hospital with a diagnosis of pneumonia and remained there six or seven days before signs indicative of cerebrospinal fever developed. In spite of the fact that the patient was shown to be a definite carrier, one would not consider this group as being any more than "moderately close" contacts.

135 cultures—12 positive = 8%.

Group 4. Consists of guards who were messmates of, and who occupied the same quarters with the patient. All lived under crowded conditions. For these three reasons they are considered "close contacts."

175 cultures—41 positive = 22%.

Group 5. Is made up of patients in an open ward in a hospital, and of nurses, doctors and laboratory workers. Two of the doctors and two of the nurses were in charge of the case of meningitis spoken of in Group 3. The patient was in an isolation room off the open ward, so that there was no real contact between him and the one patient in the ward who proved to be a carrier, nor was there any known contact between him and the hospital apprentice, who was the second carrier found in the group. Here, then, is a group which might well represent conditions found in almost any well-conducted hospital, and concerning which one would scarcely apply the term "close contact," since isolation in regard to meals and sleeping quarters was excellent, and since general hygienic conditions were the best obtainable.

32 cultures—2 positive = 6%.

Group 6. Consists of the whole crew of a collier from which a case was taken, but the patient was an electrician, first class, hence did not come in close contact with more than a small group. Therefore I have considered this group as only "moderately close" contacts.

157 cultures—28 positive = 17%.

Group 7. Represents practically the whole crew of the ship from which Group 2 cultures were taken three weeks before. This wholesale culturing seemed justified because of the second case. It may be of interest to know that only 13 of the 81 carriers of this group were sent to quarantine, while the others were isolated on the boat from the rest of the crew as far as meals and quarters were concerned. The boat sailed a few days later and the carriers aboard were to be cultured again at the next port. None of the Group 2 men appeared as carriers in this group although all were cultured both times. I consider this a "close contact" group.

376 cultures—81 positive = 21%.

Group 8. Here is a group of 37 men chosen from over 1400 members of a ship's crew. They represent the men who were most intimately associated with the patient, either as messmates, hospital apprentices, or friends. In other words, this is the most carefully picked group of close contacts in the list.

37 cultures—13 positive = 35%.

Group 9. Represents a guard squad of an oiler, living under ideal hygienic conditions, separated from the ship's crew. However, since these men were messmates, occupied the same sleeping quarters and work together, they must be considered "close contacts," especially since the patient was known to have been sick for considerably over a week before he was sent to the hospital.

8 cultures—1 positive = 12%.

Group 10. Represents a well-chosen group of men in the same mess, living in the same quarters and doing the same work as the patient. Hence it must be considered a well-chosen group of "close contacts."

20 cultures—5 positive =25%.

Group 11. Is a company of young men attending a government school. These men for the most part attend the same mess, sleep in the same quarters and pursue the same course of studies. Their physical work amounts to about one hour to an hour and a half drilling a day. Some additional facts in regard to the patient are of interest. It was discovered that the patient had been sleeping away from quarters about six nights a week for some time before he was taken sick, and that he took most of his meals at places other than the mess hall. Under these conditions it seems reasonable to call this group "moderately close" contacts at best. Living under good hygienic conditions and not exposed to physical hardship.

75 cultures—9 positive = 11%.

Group 12. Is a moderately well-chosen squad of men from a crew of 1400 on shipboard. Here hygienic conditions were good, though contact was close.

50 cultures—8 positive = 16%.

Group 13. Represents men in the same division and section as two patients. They were messmates, slept in the same quarters, and lived under conditions which would be considered crowded. One patient was a negro. Three out of four negroes in the same group gave positive cultures from the naso-pharynx. Two of these showed pure cultures of meningococcus. This is considered a "close contact" group.

72 cultures—17 positive = 20%.

Non-contact Groups. In order to gain some idea of the prevalence of carriers under varying conditions of housing, age and occupation, the groups shown in Table V (part 2) were taken.

Group A. Represents a non-selected group of men living in barracks under good hygienic conditions, eating at the same mess, and doing fairly hard physical work, out of doors. The length of service is measured by weeks rather than months. No case of cerebrospinal fever has been found in this camp at any time.

100 cultures—9 positive = 9%.

Group B. Is made up of any hundred men from a number of thousand living in crowded quarters, and eating at a common mess, but doing various kinds of work. It was taken from the same place as the contact groups 3, 4, 10, and 13 recorded in Table I (part 1). After careful inquiry it was found that all but about three of the cases of cerebrospinal fever in this district occurred in men, either at this crowded station or recently transferred from it to ships or other places, so that this control group of supposedly non-contacts in reality represents conditions where possibility of contact with actual cases of cerebrospinal fever was greatest. Moreover, three groups of "contacts" previously taken from here showed from 20 to 25% carriers. One can readily see that with 20 to 25% carriers as "seeding" groups, and crowded quarters as opportunity for sowing, this receiving ship offers the best opportunity for the spread of meningococci. Little wonder, then, that ten out of thirteen of the cases in this district came directly or indirectly from this place.

100 cultures—26 positive = 26%.

Group C. Consists of college women between the ages of 18 and 22. Some live in dormitories, others at home. Some take their meals together, others at various places.

100 cultures—1 positive = 1%.

Group D. This is a group of first and second year medical students, not doing hospital work. They have no common living or eating quarters.

100 cultures—1 positive = 1%.

Group E. This is a group of infants, in a hospital, where hygienic conditions were excellent. One member of the group had cerebrospinal fever, but was well isolated from the others.

45 cultures—1 positive = 1%.

Group F. Is a company of men from the same place as Group 11, in the preceding chart. Conditions of living, the matter of age and occupation are the same. Hence this represents a real control "non-contact" group.

79 cultures—8 positive = 9%.

DISCUSSION.

One can readily see from the data given in connection with the above groups how impossible it is to draw fixed lines between "close" contact groups and groups of only "moderately" close contacts, and how worthless mere percentage would be if conditions of living and occupation, etc., were not considered. However, by looking at the groups critically, I believe certain points of interest are evident.

Considering the groups of "moderately close" contacts, 1, 3, 4, 5, 6, and 11, one finds that the one which came from the most crowded quarters shows the highest percentage, namely, 22%, and that the one that came from a collier, where hard work and exposure to extremes of heat and cold were important factors, showed 17%, as against 8 to 11% shown by Groups 1, 3, 5, 11, where the possibilities of contact were about the same, but where there was no crowding in quarters, no severe work, no particular exposure to extremes of heat and cold.

Let us now consider the groups of "close" contacts. We will first consider those groups taken from ships, namely, 2, 7, 8, 9, and 12. Group 9, which shows the lowest percentage, 11%, represents only eight men who were living under the best hygienic conditions, and whose work was guard duty. Group 12, which shows the next lowest percentage, namely 16%, was not carefully chosen, hence cannot be considered "close" contacts as far as the case is concerned. Groups 2, 7, 8, which show the highest percentage, *i.e.*, from 20 to 35%, represent almost similar conditions of living and work, the chief variable being closeness of contact with a known case. Here it will be seen that the group which was most carefully selected, Group 8, shows the highest percentage, namely, 35%. The remaining two groups of "close" contacts, Groups 10 and 13, also represent approximately the same conditions of work and living, and give 25 and 20%, respectively.

From the study of the non-contact groups, it is evident that 26 may represent the carrier percentage among large groups of recruits who live in crowded quarters. In contrast to this, 9% may represent the number of carriers among recruits who have not come in contact with a known case, and who are living under good hygienic conditions. This same percentage, 9%, may also fairly represent the carriers among recruits who are students, living in barracks under good hygienic conditions. Leaving the military groups, it is quite evident that a much lower percentage, even as low as 1%, may represent the number of carriers among groups of students, both men and women, of about the same age as the recruits, but who live either at home, or in small groups.

Probably 1 to 2% represents the number of carriers among infants in a well-conducted infants' hospital.

QUARANTINE.

The carriers for this district are isolated at the Government Quarantine Station, Gallop's Island.

The men themselves have helped in the cooking, carpenter work, etc. More recently they have helped to repair the roads.

The Special Aid Society, through Mrs. Barrett Wendell, has supplied a phonograph and records, magazines, daily papers, and books. The Y. M. C. A. and others have contributed a piano, tobacco, etc.

Thus far no carrier has been discharged in less than the 21-day limit set by the Navy Department. No carrier has come down with the disease. No man in any of the groups cultured has come down with the disease. In other words, the cases have always been men not previously cultured.

SUMMARY.

Meningococcus carriers in this district have been isolated on the basis of agglutinations in 1/10 or 1/50 dilutions of polyvalent anti-meningococcus sera on slides, followed by gross agglutinations in tubes, the final readings being taken after twelve hours in the incubator at 55° C. and twelve hours in the ice box. This has been supplemented by a careful study of cultural characteristics.

Over three thousand cultures have been examined, of which about three hundred have been positive for meningococci. Of this group about 40% agglutinated specifically in 1/10 anti-meningococcus serum, and about 60% as high as the 1/50 dilution on the slide.

Experience has shown that results of gross agglutination in tubes rarely alters the positive findings obtained on slides.

Repeated examinations of a group of 100 carriers showed that only 16% were ready for discharge at the end of the minimal isolation period of 21 days; that 7% remained positive over forty days; that 6% showed positive cultures after three successive negatives; that 49% showed positive cultures after one or more negatives, thus demonstrating a persistent, and an intermittent type of carrier; that a carrier may show a pure culture of meningococci on one examination, on the next only a few scattered colonies in a mixed culture, and on the third a pure culture of meningococci.

Treatment has been of no value in our hands. A sharp decline in the number of positive cultures from the carrier group has been noted during the past two weeks of warm weather.

A study of 13 groups of so-called "contacts," and 6 groups of "non-contacts" brings out the following facts:

Under good hygienic conditions, groups of naval men in this district, if only moderately well selected on the basis of possible contact with a known case of cerebrospinal fever, show from 6 to 8% carriers. If hygienic conditions are poor, that is, if men are in crowded quarters, are subjected to severe physical labor under extremes of heat and cold, such groups may show from 17 to 22% carriers.

Among groups of naval man well selected on the basis of possible contact with a known case of cerebrospinal fever and living in close contact with each other either on shipboard or in crowded quarters, 20 to 35% appear to be carriers, the upper limit representing the most carefully chosen group. But when only a small group of guards, isolated from the rest of a crew, is considered, only 11% appear positive.

One group of 100 men taken at random from a camp where there had been no case of cerebrospinal fever, and where living conditions are excellent, showed 9% carriers as contrasted with 26% which appeared in a group of 100 taken from barracks where men were decidedly overcrowded and from which a number of cases had been taken, also, where 20 to 25% carriers had been found on previous examinations.

Another non-contact group of 79 men representing a naval student body living in barracks under good hygienic conditions, showed 9% as contrasted with the 1% found among 100 women students of Simmons College, and the 1% found among the first and second year Harvard medical students.

In these last three groups about all the factors were common, but the naval group ate at a common mess and lived in barracks, whereas the others lived chiefly at home or in small groups.

Hence it is evident that the important factors which change the number of carriers from as low as 1 to 2% among civilians to as high as 20 to 35% among recruits are: contact with known cases of cerebrospinal fever; unhygienic conditions such as come from crowded barracks; severe physical labor, coupled with exposure to extremes of heat and cold; and, finally, contact with carriers of meningococci.

When this work was being organized, Surgeon Milton J. Rosenau, U.S.N.R.F., during a visit to four or five laboratories, received personal information which has been freely used in the meningococcus carrier work done here. Hence, through him I am indebted chiefly to Dr. P. K. Olitsky, of the Rockefeller Institute, for suggestions as to methods and media, but also to Dr. Anna W. Williams and Dr. Charles Krumwiede, Jr., of the Research Laboratory, New York City Department of Health; Dr. G. W. McCoy, Director of the Hygienic Laboratory, U. S. Public Health Service, Washington, D. C.; and Admiral E. R. Stitt, Director of the Naval Medical School, Washington, D. C.

Anti-meningococcus serum and stock meningococcus strains were furnished by Dr. R. Kohn, of the Antitoxin and Vaccine Laboratory, Massachusetts State Department of Health, and Dr. Olitsky, of the Rockefeller Institute.

The laboratory work was done at the Harvard Medical School, in the Department of Preventive Medicine and Hygiene, at Dr. Rosenau's invitation, since the new laboratories at the U. S. Naval Hospital, Chelsea, were not available at the time.

WITH THE R.A.M.C. IN FRANCE.

By M. A. Harrington, M.B., New York City,

Psychiatric Institute, Ward's Island.

For one year I served with the Royal Army Medical Corps, and my purpose in writing what follows is merely to tell something of the life of the medical officer with the British armies in France, as I found it. I pass from the preliminary stages,—the signing up at the War Office, the time spent in camps in England, the trip from England to Havre, and from Havre up to the line,—and proceed at once to tell of my first job in France, which was with a field ambulance.

A field ambulance is a sort of movable hospital, situated, as a rule, some distance back of the lines, but within reach of the enemy's long-range guns. I found the ambulance at which I was ordered to report, located in an orchard. It consisted of a collection of portable huts, tents and improvised structures of one kind or another, which overflowed from the orchard into an open field across the road. Narrow walks had been laid down, making it possible to get from one building or tent to another, but if a man had the misfortune while passing along one of these walks, to step off the edge, he at once sank into unplumbed depths of mud; that is, unless the weather happened to be quite cold and the ground frozen hard.

The officers' quarters consisted of two Nissen huts—contrivances named after their inventor, and supposed to be portable. One of these huts was used for sleeping quarters, and although the weather was at times very cold, it was not heated in any way. We should not have minded this so much if it had not been extremely damp. On returning at night we would find beads of moisture glistening on our blankets, except in cold weather, when they were replaced by crystals of frost. My pajamas were always wet and clammy when I put them on at night, and my shirt had gotten into the same condition by the time I came to put it on in the morning. After a short time I grew weary of changing into wet garments twice a day, and adopted the practice of sleeping in my shirt, taking it off only on the rare occasions when I indulged in the luxury of a bath and change of underwear.

Our other Nissen hut served as a mess and was comparatively comfortable, being heated by means of a stove improvised from an old oil drum. Aside from the stove, the only furniture the mess contained was a rough board table which our carpenter had made and a couple of long benches upon which we sat at meals, and which we drew up before the stove as we gathered around it for warmth in the evenings.

For the accommodation of our patients, we had two large huts, one of which served as a surgical and the other as a medical ward. I had charge of the medical ward. It contained about thirty or forty beds a row along each side of the hut, with an aisle down the middle. The beds were merely frames of rough scantling covered with "chicken netting," on which blankets were spread, there being no mattresses or sheets. The patients in these wards were all men likely to be fit for duty in a week or ten days, more serious cases not remaining with us but being sent on as quickly as they came in to the casualty clearing station, which was at rail head. We had no nurses; all the work was done by medical orderlies. Also, no facilities were provided for anything beyond the simplest kind of operative work. For anything more elaborate cases had to wait until they reached the C. C. S., where there were trained nurses and a well-equipped operating room.

My first work in the morning was, usually, to make rounds on my ward. After this there would be various odd jobs to do, and all day patients were coming in from the line who had to be examined and admitted, or else sent on by motor car to the C.C.S. In the evening, after dinner had been cleared away, the day's outgoing mail was dumped upon the table and everybody took part in the work of censoring it. The pile was always a large one, for we not only handled the letters of the men belonging to our unit, but those of our patients as well. They, not being very ill, spent most of the day writing letters, which the unfortunate medical officers had to read in the evening. There was one amorous youth who had five girls in England to whom he wrote regularly. I will say this for him, however,—he played no favorites, for, barring only the difference in names, the five letters which he sent out each day were exactly alike.

After a short time in the ambulance I was sent forward to an advance dressing station. An A.D.S. is a post close up behind the lines, to which the sick and wounded are brought in order that they may receive first aid and then be sent back by motor car to a field ambulance or casualty clearing station. I found our dressing station in a pretty little village which nestled in a valley. Along the crest of a hill overlooking this valley were the German trenches. Old Fritz, sitting up there and looking down upon us, could have wiped us off the map at any time. He did not do it because he had better use for his ammunition, and because, moreover, we could have retaliated by wiping out one or more of his villages, which lay similarly exposed to our guns.

In charge of this dressing station were another doctor and myself; we occupied part of a rather fine old house, a French family occupying the rest of it. The Germans had a nasty habit of raking the road in front of us with their machine guns at odd intervals during the night, in the hope of catching any traffic which might be going up under cover of the darkness. Sometimes their bullets pattered on the walls of our house, and as the room we used for our mess faced toward their trenches, it was necessary to wall up the windows with sandbags. This left the room in almost complete darkness, and so we had to keep a candle burning whenever we occupied it. The shells from the German batteries roared overhead both day and night, but as they were usually aimed at targets far in our rear, they gave us less annoyance than one of our own six-inch howitzer batteries which was hidden in a wood just behind us and fired directly over our heads. We had no glass in our windows; in fact, I doubt if there was a whole pane of glass left anywhere in the village. Instead, we had pieces of cloth tacked onto the window frames. Every time the battery behind the house fired, the force of the blast would blow in our flimsy cotton window coverings and we would have to go around and nail them all up again.

As in nearly all the billets in France, we suffered a good deal here from the cold. For our personal use, we received daily one scuttle full of black dust, euphemistically referred to as coal. Whenever we tried to build a fire of this stuff most of it would fall at once through the grate and be lost in the ashes. Because we had such a limited supply, we seldom lit a fire in the morning. We escaped the cold at breakfast time by having our breakfast brought to us in bed and at lunch we wore our greatcoats. Then in the evening we were able to have our fire lit and dine in comparative comfort.

In addition to attending the sick and wounded who came to the dressing station, it was part of my duty to visit daily several aid posts, small advanced stations manned only by orderlies. This meant a walk of several miles, part of it over open roads that were sometimes shelled, and part of it through the trenches. Of course, I always wore a helmet and carried my gas mask. When in a forward position no sensible man ever permits himself to be separated from his mask. We made it a practice not to go even from one room of the house to another without taking our masks along and placing them in a convenient position where they could be slipped on at a moment's notice.

I shall spare the reader all account of my experiences while serving as a regimental M. O. with a brigade of field artillery, and after that with a battalion of infantry, positions which I held only for a very short time, and shall pass on to my last job, which was that of M. O. to a group of heavy artillery. This is regarded in the army as a "cushy job." The duties are light and the living conditions comparatively comfortable. Moreover, it allows of a great deal of personal independence and freedom from red tape.

When I first joined the heavy artillery we were billeted in a village around about which our batteries were stationed. It was my business to visit these batteries daily in order to attend the sick and to see that the sanitary and living conditions generally of the troops under my care were kept up to the highest possible level. To enable me to do this, I was provided with a motorcycle. When the roads were too muddy for the motorcycle, I used a horse, and where a horse couldn't go, I walked.

I had never ridden either a motorcycle or a horse before entering the army. The first week or so that I attempted to use the motorcycle I fell off, at least once every time I went out with it, returning home plastered with mud. After a while, however, I began to gain control over my machine, and by the time I left France, I considered myself quite a skilful rider. With my horse, the story was very different. I had allotted to me an old gray mare which had no respect whatever for my wishes or opinions. She always wanted to travel in an opposite direction to that in which I had planned to go and she usually wanted to travel at a lively pace. Now painful experience has demonstrated the fact that for me a very gentle trot is best; when the speed is increased my style tends to deteriorate, and I do not present a dignified appearance to the troops which are continually passing on the road. In going my daily rounds I had to pass along a road, on one side of which were a number of batteries. As I rode past these guns they would frequently begin to fire, and when that happened my mare would at once begin to get up speed. When this happened, the first thing I did was invariably to lose my stirrups, and as I strove frantically to recover them, I would be bounced mercilessly about, and every time I came down in the saddle I seemed to hit it in a new place; at the same time my steel helmet would rattle and pound on the top of my head, being prevented from flying off altogether only by the strap, which I always took good care to fasten securely under my chin before mounting; then my reins would become entangled, and as I instinctively humped forward in my saddle, the gas mask, which I carried slung over my shoulder, would swing around in front of me, and get mixed up with the reins or pound me in the stomach. In this plight I would pass groups of Tommies in the road who would line up and salute as I went by, concealing derisive grins behind their upraised hands.

The cases which I had to see in the course of my rounds were seldom of a serious nature. There were teeth to pull and boils to lance; there were coughs and colds and chilblains, and also German measles. During one period I used to spend about half my day inspecting billets and contacts quarantined because of this childish ailment.

For some time after I joined the heavy artillery we were billeted in villages close behind the lines, but following the big battle on Easter Sunday of last year, the enemy fell back and we moved up into a country where there were no villages, only shapeless heaps of brick and rubbish. Here we lived out in the open. At first I occupied a Nissen hut, but later constructed for myself a tiny dugout in an old German trench. Then, as the weather grew warmer, I built outside the door of my dugout a sort of veranda with a roof of corrugated iron and walls of canvas, which ordinarily were kept rolled up out of the way, but could be left down when it rained. As things grew quieter in that part of the line, having very little to do, I amused myself by digging up wild flowers in the neighboring fields and planting them around my veranda. As the season advanced, these flowers grew large and formed a pretty screen about it. Here, during the summer afternoons, I used to lie on an improvised couch, and write letters or read. Behind me was an observation balloon and frequently, as I lay reading, the Germans would begin to fire at it, their shrapnel bursting directly over my head. However, as it was very high up and the bullets carried a long distance before they reached the ground, I was in no danger from it, and so it did not interfere with either my reading or my peace of mind.

I also slept on the veranda. During that time the Canadians were attacking Lens, which was some distance to the north of us, and after I had turned in at night, I could lie and watch the continuous flashing of their guns as they boomed away in the distance until, becoming drowsy, I would roll over and drop off to sleep.

I remained with the heavy artillery until autumn, when I received my discharge, and after a short stay in England, returned to America. As I look back upon my period of service with the British Army I feel that it was, on the whole, a pleasant one. I did not gain much in the way of professional knowledge,—the medical officer in the line never does. The conditions he has to treat are, for the most part, simple ailments. When he has a serious case he never treats it himself, but sends it back at once to the hospital. As a rule, he is not very busy. During a big attack he may be worked very hard, but big attacks are few and far between, and in the long intervals which intervene, his life is rather leisurely and humdrum. On the other hand, he has an excellent opportunity to observe the great game of war as it is being played in Northern France today. He lives, as a rule, a wholesome outdoor existence, and along with this there is a zest, a freedom about the life which makes a return to the narrow round of duties and petty restrictions of civilian life extremely irksome. After all, the human race has been almost constantly engaged in warfare from the beginning of history. Man has evolved under conditions where it has been necessary always to fight. The soft-sheltered conditions of our present civilization date only from yesterday, and it is not surprising that men readjust themselves very readily to the old primitive life and that, notwithstanding the dangers and discomforts, come, after a short time, really to enjoy it. When the longed-for peace comes, and the men, returning from overseas, take up again their former occupations, many a one will long for the old days of active service with all their hardship and danger.

AMERICAN PROCTOLOGIC SOCIETY.—Owing to conditions brought about by the war, the American Proctologic Society has decided not to hold its meeting in Chicago on June 10 and 11. The Society will probably not meet again until after the war is over.

HOSPITALS AND VOCATIONAL TRAINING.*

BY RICHARD P. BORDEN, FALL RIVER, MASS.,
Secretary, War Service Committee, American Hospital Association.

THE problem of vocational training for the disabled is one which directly concerns hospitals and is largely dependent upon their coöperation. While the immediate need is for soldiers and sailors, its value is equally great for those incapacitated in civilian pursuits. Preparation should, therefore, be for permanent installation of vocational training for therapeutic and rehabilitation purposes. Civilian hospitals should be considered as the centers of vocational training and properly equipped therefor as in this way only may permanency be assured.

"The average program for a man incapacitated for further military service overseas may be described as follows:

First, a period of acute illness or surgical care; second, a period of convalescence, frequently of long duration; third, vocational re-education. These stages may merge imperceptibly into one another or they may be separate or distinct. In many instances one or two of the stages may be altogether omitted." (Report, p. 11.*)

As will be seen later, vocational therapy should begin as soon as the patient's condition will permit, and both therapeutic and rehabilitating teaching should be done in consultation with the physician. All stages of the patient's progress, therefore, should be provided for in his initial location after his return to this country.

"While many of the patients will have the opportunity to complete the training begun in the curative workshop in the vocational school, many others will be able to go directly into wage-earning occupations. The period of occupational therapy must, therefore, be used to prepare and adjust many patients to civilian life." (Page 13.)

Therefore the hospital should be located in the neighborhood of industrial facilities and, as the desired result is permanent occupation, in the place where the patient, his family, and friends reside—in other words, in the patient's home town. This is emphasized by the following:

"Canadian figures show that 80% of the disabled men are able to return to their former industry without vocational training, that 10% need complete vocational re-education, and 10% partial reëducation. It, therefore, follows that 80% of the men receive no further instruction after leaving the curative workshop, and that 20% receive varying degrees of vocational re-education." (Page 18.)

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* An Analysis of the Report of the Federal Board for Vocational Training entitled: "Rehabilitation of Disabled Soldiers and Sailors—Teachers' Training for Occupational Therapy" (Senate Document 167) in its relation to hospitals.

"Whenever possible, the man should be directed into a former occupation so that all possible use may be made of his past experience." (p. 60.)

"When a new occupation is selected it should be one whose processes are kindred to the old trade and whose tools and raw materials will be as familiar to the worker as practicable." (p. 61.)

Industries frequently are grouped in certain cities. For instance, the steel industry, machinery, boots, textiles, etc., etc. Opportunities for resuming a former industry or some branch thereof are greater in the man's original habitat.

"Even technical schools, with a variety of equipment, are not always able to teach all of the skilled trades, and the student must, in many instances, get his final instruction in the factory itself." (p. 33.)

The desirability of assigning patients to hospitals in the vicinity of their homes is accepted in the report.

"Since the reconstruction hospitals will be located in different sections of the country, and the patients will be sent to the hospitals suited to their needs nearest their homes, it will not be necessary to install all lines of occupations in industry, commerce, and agriculture in every hospital. For instance, the hospital in the Middle West would need agricultural opportunities rather than the textile trades of New England. Those occupations should be taught which are typical in the area to which the patients will return." (p. 33.)

The economic and efficiency value of such apportionment of patients is suggested in the above. Few men can be obtained who can master and teach all industrial occupations or learn the various opportunities of each for the disabled. Yet they must know the opportunities and risks of the trade which they advise and prepare their patients to follow. (See Report, p. 61.)

While it is desirable that the patient should be discharged from the hospital as soon as his condition permits, from the physician's point of view, in order that he may not acquire the hospital habit, become a malingerer or hospitalized, nevertheless,

"Permanent provision must be made for the medical treatment, vocational training, placement, and follow-up work for the disabled men." (p. 65.)

Thus the need of using permanent institutions is apparent. The patient should, in case of recurrence, be enabled to return to his accustomed hospital, where his histories are available, his constitutional condition known, and his needs best recognized. Moreover, in such a permanent institution only can proper "following up" be done. Often patients do not recognize the opportunity for improvment, and are averse to further treatment. They, therefore, will not return for examination, advice and further treatment unless properly followed. On the other hand, many patients in pain or distress voluntarily seek aid in the hospital from which they were discharged.

It cannot be expected that general military hospitals will be maintained in the number required for war after peace ensues. When such hospitals are abandoned their former patients will know of no place to go and there will be no following up. By the use of existing hospitals for military purposes, the problem is quickly solved. After the patient is discharged from military service he can return to the same hospital, near his home, under the auspices of the War Risk Insurance Bureau, and thus his opportunities for medical and vocational treatment will be made continuous.

In this connection it should be borne in mind that both the Army and Navy men will need vocational treatment; that the provision for such treatment should not be duplicated, because of the cost of equipment and the scarcity of trained teachers, and that the assignment of an occupational teaching force and a common vocational school to a group of civilian hospitals will make such facilities available to both services.

"The disabilities of industrial accidents have many points in common with the disabilities of war, and if occupational therapy is a war measure necessary for the returned soldier and sailor, it would seem to be just as urgent for the victims of civil disabilities, who outnumber the military victims by a conservative estimate of thirty-eight times." (p. 68.)

It is necessary for the War Risk Insurance Bureau to make use of civilian hospitals for the treatment of discharged men who come under its jurisdiction. No other plan is practicable, and it is understood that arrangements with hospitals for this purpose are already in progress. Moreover, as noted above, industrial needs for vocational training after injury even exceed those of the military services and, therefore, as

"It was stated in the minutes of the first two meetings of the committee for reëducation of war cripples, held in Paris in July, 1917, that—

"The institutions would not cease to exist with the conclusion of peace, but would then take up all questions relating to victims of accidents at work."

"Prof. Jules Amar has said:
'The war will be over, but the industrial work and the necessity for the scientific study and physical organization of it will be with us forever.' "

"There will always be the need for rehabilitation of the damaged human material discarded from the industrial world.

The economic and social problems which are crystallizing in the present emergency—as T. B. Kidner has pointed out—are only made more apparent through their being forcibly brought to our attention by the urgency of the disabled soldier problem; if, for instance, any doubts exist as to the necessity for a broad and generous scheme of industrial training for the nation, the contrast in the outlook for the future between the disabled men who have been trained thoroughly in technical lines before enlistment and those whose only commodity was unskilled labor, should remove them. On the one hand, confidence and calm serenity; on the other, fear and dread of the future. We are already hearing of preparedness for the 'war after the war.'

Occupational therapy touches all those vital problems and must be utilized in the future, not only in healing and alleviating more extensively those whom it now touches, but in reaching all classes." (p. 68.)

In the interest of economy and efficiency, as well as for the ultimate welfare of the citizen soldier, is it not evident that the plan of utilizing civilian hospitals should be given serious consideration with adequate investigation and study of all the elements involved?

The average daily number of beds unoccupied in general hospitals in the United States is 40,000. True, a large proportion of these are unavailable for military use, but it is believed that with this foundation the number of beds which can be temporarily added to the existing institutions, plus those which, for one reason or another, must be provided in purely military hospitals, would meet all requirements for general hospitals.

The experience of Canada indicates that for every 1,000,000 men sent overseas, 10% are returned home as unfit for service, and about 30,000 of these will be in hospitals at one time. (Report, p. 15.) The blind, tuberculous, convalescent, and neurasthenic should be placed in special hospitals, and surely the remainder could easily be accommodated by utilizing the well-organized, constructed and equipped hospitals in our principal cities in addition to the purely military hospitals necessary in certain localities.

No attempt has here been made to point out the many other reasons for adopting the plan of utilizing existing hospitals for military purposes. Suffice it to say that from every point of view excepting the necessity for military control, the arguments favor the proposition, and that this sole objection is not insuperable is shown by experience in the past, as well as the present war period. Surely the authority of military discipline is broad and elastic enough to cover the situation.

"Inasmuch as the period of adjustment to civilian life is difficult, and since only about 20% of the men have the opportunity to adjust themselves during the period of vocational education, it is evident that some kind of preparation for civilian life must be offered to the 80% who will be able to return to their former work after convalescence without further training. The curative workshop, like the other departments of the hospital, must be under military discipline. Authority is necessary during convalescence so that the men shall not retard or even permanently prevent their recovery by excessive exercise or rest, wrong food, or bad habits. The 'work prescription' must be enforced just as rigidly as any other kind of prescription. Beyond this point, and except in rare instances, there should be no recourse to military discipline.

The greatest benefit derived by the men is the hardening of the mind and muscle in preparation for civilian life." (p. 64.)

Military discipline will be needed in the "general reconstruction,"[1] tuberculosis and convalescent hospitals for two purposes, viz.; to preserve order and to enforce the regimen. With a proper system of punishment and the slight machinery necessary to carry it into effect, there should be no difficulty. A hospital for the unruly might be desirable or there may be other ways of obtaining the desired result. The fear of punishment is the army as well as the civilian way of preserving order, and it may be made to follow men in hospitals as well as in camps or on liberty. But, as pointed out, the hospital should be used as a place to wean back the soldier to the responsibilities of civilian life, and the gradual slackening of military guardianship will be beneficial.

Hospitals have already begun to develop the plan of occupational training.

In the report of the Social Service Department of the Lakeside Hospital, Cleveland, for 1915, it is said "We should like to enter a plea for an employment bureau equipped solely for handicapped."

The Modern Hospital for June, 1917, is largely devoted to a history and discussion of the subject.

Many hospitals have begun, or are considering the advantages of, such work. The civilian hospitals are, undoubtedly, ready to coöperate if given the opportunity.

SUMMARY.

To insure permanency in vocational training, civilian hospitals should be utilized.

The need for such training will continue after discharge from military service.

Military hospitals should be located where there are industrial facilities.

The training should be in the line of former occupation, therefore men should be returned to hospitals near their homes.

There will be need of recurrent treatment, so the hospital should continue within reach of the patient.

The "general reconstruction" hospital should be permanent.

There should not be unnecessary duplication for the Army and Navy.

The money spent in establishing vocational schools should not be wasted. They should be continued for industrial needs, and thus be perpetuated for possible future military service; like universal military training, an element of preparedness.

Civilian hospitals used for military purposes are available for discharged men under the War Risk Insurance Bureau and the U. S. Workmen's Compensation Bureau. The vocational schools established in such would be available for triple use.

Economy and efficiency are satisfied.

Civilian hospitals can be made to meet capacity requirements.

Military discipline can be preserved.

Hospitals are ready to coöperate in vocational training.

SPONTANEOUS PNEUMOTHORAX COMPLICATING PULMONARY TUBERCULOSIS.

By Herbert F. Gammons, M.D., Carlsbad, Texas.

The diagnosis, treatment and prognosis of spontaneous pneumothorax is dependent upon whether the pneumothorax is complete or partial, and whether the opening in the ruptured area is open or valvular, or whether it has closed.

The partial pneumothorax is the result of adhesions limiting the escape of air to the pleural cavity and is, therefore, localized, and if the opening is not valvular, the prognosis is good, and the treatment, rest. If there is a valvular opening, it is often necessary to withdraw the air in left-sided cases especially, and where there is much discomfort.

In the complete type with a valvular opening, we have at times a very troublesome complication, especially when the rupture is on the left side.

Spontaneous pneumothorax is very infrequent in ordinary life, although in war times we must expect the number of cases to be greatly increased. Marshark and Craighead[1] review the literature and report a number of cases of recurrent ruptures, and in summarizing, they find that the greatest number of recurrences occurred in people who showed no demonstrable tuberculosis, and the majority of them recovered. Wallgren[2] has met this complication in two cases as a result of needle puncture during administration of artificial pneumothorax.

I have seen only six cases out of approximately six thousand studied from one to twelve months. It is quite possible and probable that many partial ruptures have been overlooked in the far-advanced cases where, on account of adhesions, the rupture did not produce much discomfort.

Following is a brief history of these cases:

Case 1. Male, moderately advanced case, upper two-thirds of left lung infected and scattered areas in right. Complained of sharp pain in left lung at the top, appeared very nervous, dyspneic, and was cyanotic. Examination showed complete valvular pneumothorax of the left side, with the heart pushed over to the right chest entirely. Patient died two days later.

Case 2. Female; advanced case, both lungs entirely infected. During a coughing attack experienced severe pain in the right lung, was very dyspneic and nervous. Patient died in twenty-four hours.

Case 3. Male. Advanced case; right lung entirely infected, with areas scattered in the left. After a severe coughing spell expectorated small amount of blood and complained of severe pain in the right chest; dyspnea marked, very nervous and temperature and pulse elevated. Examination showed right complete pneumothorax. Patient gradually improved and six months later developed an effusion in the right pleural cavity, which was allowed to remain for some time, but eventually was withdrawn. Patient gradually declined, and the area at the site of operating did not heal. Patient died short time after.

Case 4. Male. Moderately advanced case right lung, upper two-thirds infected; left, few scattered areas of infection. After severe coughing, complained of severe pain in the right chest, dyspnea, rapid pulse, elevated temperature and marked nervousness. After a few hours, patient had developed a subcutaneous emphysema of the upper part of the body on the right side and was markedly dyspneic. Examination showed a complete pneumothorax with a valvular opening on the right side. A large cannula and trochar were inserted over the rupture and the chest bound down with adhesive plaster. Patient made good improvement and six months later had an operation for empyema. At present is doing well.

Case 5. Male. Moderately advanced; left lung has scattered infection throughout, with a possible cavity in the lower third. Right lung, few scattered areas of infection. After severe coughing attack, experienced a severe pain in the left chest in the area of possible cavitation; markedly dyspneic, cyanotic, and temperature and pulse elevated. Examination showed left pneumothorax, with probable valvular opening. Air was removed at different intervals. An effusion developed and was withdrawn, and the pleural space was filled with air. Patient doing well, but effusion persists.

Case 6. Male. Moderately advanced; both lungs infected in upper halves. After a severe coughing attack developed severe pain in the left side, with marked dyspnea and cyanosis. Examination showed a complete pneumothorax of the left side with a valvular opening. Air was withdrawn, using the apparatus recently described[3] by connecting the tubing to the inlet tube and using the water suction. Patient was much relieved, and after three withdrawals of air is doing well.

In withdrawing air it is best to withdraw as much as possible and not go by the manometric readings, as often in these cases the manometer shows marked negative pressure; at the same time the patient is very dyspneic and cyanotic.

The first few cases that were cited occurred a number of years ago, before the artificial pneumothorax apparatus was used very extensively, and it was considered that interference in any other way would not be beneficial.

Lately we realize the good that can be obtained by withdrawing air in these rupture cases, and while formerly the spontaneous rupture of the lung was considered a fatal complication in pulmonary tuberculosis, still now the prognosis in these cases is much better, although many cases develop an effusion which in a number of cases becomes purulent. Properly treated, the complete pneumothorax of the left side is very favorable.

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[1] Marshark and Craighead: Recurrent Spontaneous Pneumothorax, American Review of Tuberculosis, Vol. i, No. 2.
[2] Wallgren: Upsala Läkareförenings Forhandlingar, xxi, No. 67.
[3] Gammons: Improved Method of Refilling Cases Treated by Artificial Pneumothorax, Journal A. M. A., Mar. 23, 1918, p. 843.

Medical Progress.

RECENT PROGRESS IN PSYCHIATRY.

By Henry R. Stedman, M.D., Brookline, Mass.

THE TEACHING OF PSYCHIATRY.

Meyer[1] thus summarizes the present trend of teaching psychiatry:

1. Psychiatry cannot limit itself to the traditional asylum-diseases. It has become the medical study of all types and forms of disorders or involvements of the total behavior and mentation, from the simplest, we might say normal, defects and difficulties of adaptation, to the more sweeping affections, some of which may disqualify the patient for being his, or her, own safest guide and adviser, and then may enter the category or temporary phase of committable disorders.

2. The second-year course of the medical student includes the methods of recording a medi-

cally useful biography, of using the standard tests of intelligence and motor performance, of making out the principal facts and determining factors of a normal individual's make-up and reactive tendencies.

3. The third-year course deals with the standard reaction-types or reaction-complexes of psychopathology and the factors entering into them.

4. The fourth-year course takes up the general routine of cases, and the study of special problems and an individual study of at least six cases by each student.

5. The principal departure from tradition is the inclusion of normal psychobiologic adaptive problems, and the getting away from the dogmatic notion of "one person, one disease," dictated by a classification-ridden tradition, and from a nosology which neglects too many points important for the understanding and treatment of the actual patient.

6. Hence, we should say that the student is led to recognize the facts and factors entering into the simple entities and combining in the more complex disorders, so that he may get a dynamic, as well as a structural, conception of the patients whom he is called on to treat.

One of the principal consequences of this mode of instruction is that the students frequently find patients in other divisions of the hospital who, according to their impressions, should be referred to the psychopathologic or psychiatric department, especially many of those patients who, according to the internist or surgeon, "have nothing the matter with them," but who should not be sent away without a study of their psychobiologic adaptation. It is probably not practicable to transfer all these patients; hence, why not get accustomed to use the psychologic training wherever it is needed? We have to realize that in all branches of medicine, physicians are expected to apply psychopathologic methods, just as modern psychiatrists make use of all the methods and experience presented by the other departments of medicine, even if the patients have mainly psychopathologic problems.

Another consequence is that quite a few students begin to see, in conditions which are looked on as normal or as merely nervous, possibilities of readjustment which may become of inestimable value to the patient and in the interest of preventive medicine and hygiene because the worker is put into the position which enables him to deal with the component factors before the full-fledged traditional pictures have established themselves, and have begun to overawe both patient and physician.

RELATION OF SYPHILIS AND TABES.

If it be true, as Church holds, that one man in every five is syphilitic, then of no less import, according to Throckmorton,[2] is a further statement that every case of syphilis, from the very incipiency of the infection, is, once and for all, primarily, a case of nervous syphilis. These statements, to say the least, are astounding, and if valid, cannot help but have great bearing on the future consideration of this disease.

The predilection of syphilis for nervous tissue is well known, and to a degree may be satisfactorily explained on strictly embryologic grounds. Every syphilographer and dermatologist knows well that syphilis is a disease which clinically, in characteristic cases, is potent to form well-marked skin lesions. This point, then, on the selective action of the disease, would appear to be well taken when one considers that both nervous and skin tissues have their origin from ectoderm, the outer layer of blastodermic membrane. In a further consideration of the selective action of syphilis on the body tissues, it would not be unreasonable to assume that, in those cases manifesting the latent effects of syphilitic action on nervous tissue, disorders of the skin and mucous membranes are insignificant or entirely absent. In other words, the so-called secondary symptoms of syphilis would appear to play an exceedingly minor rôle in those cases which, later, are so prone to develop the late or so-called tertiary manifestations of the disease. The truth of this statement will be amply borne out by those who have carefully considered the histories of patients suffering from tabes or paresis. Here, the absence of marked secondary phenomena would appear to be the rule rather than the exception. This leads to the natural conclusion that the battle waged by the products of syphilis in such cases is one mostly, if not entirely, against nervous tissue, allowing the cutaneous structures a respite against the invasion of so formidable an adversary. The occurrence of conjugal tabes or paresis is merely a strengthening link in the chain of evidence, showing that the spirochetes are capable of variation, and that under circumstances, perhaps not as yet well understood, strains are transmitted which are capable of producing those destructive lesions of the central nervous system sometimes encountered even in the conjugal state.

PERSONALITY IN PARESIS.

Osnato,[3] under this head, points out that for many years psychiatrists, and other clinicians, have been puzzled by the fact that, of the great number of persons who are infected with syphilis, only a few, probably less than 3 per cent. of the total number of syphilitics, eventually end as paretics. If we, therefore, postulate in these patients the presence of a defect in the nervous system, particularly the brain, which exists either as a hereditary or as an acquired weakness, then Adler's conception of organic inferiority helps to explain the problem. Adler conceives that the neurotic is somatically inferior, also that this inferiority affects more than one organ and that, as an over-compensation medium, the central nervous system is always involved. In other words, if we can prove that, before the onset of his psychosis, the psychotic paretic is practically always a neurotic, then we can go further and say that paresis has developed in him because the central nervous system is an inferior organ and the inferiority serves to determine the location of the characteristic destructive process caused by his syphilitic infection.

PSYCHOTHERAPY IN CHRONIC INTERNAL DISEASES.

Yarotzky[4] pleads for the physician to realize that his connection with a case of chronic internal disease is not restricted to giving the patient directions as to food, drugs, exercise, etc., to enable him to keep up under his chronic disease and postpone the fatal outcome as long as possible. The physician should realize what it means for a man who has lived mainly for the pleasures of the table, for example, to be obliged to restrict himself to the housing and diet necessary with severe chronic kidney disease. He keeps transgressing the doctor's directions, and the doctor gives him up as doomed. Instead of this the physician should step in and aid the patient to acquire an entirely new view of life and attitude of mind; live for others, cultivate a love of art and of science, interest himself in his environment—in short, instill idealism, altruism, as a physiologic factor. In his practice he has noticed that persons who develop pneumonia or diabetes have almost invariably passed recently through some severe emotional stress or financial worry.

The fear of death, which acts like a whip in acute disease, grows dulled in the chronic, and the patient debates whether mere living is worth all the trouble. Here is the field for psychotherapy, as an adjunct to all that medical skill can suggest in the special case. It is indispensable to enable the patient to profit by the physician's skill otherwise. Yarotzky claims that the physician can train the patient's feelings, ideas and ideals, just as he can train an organ to strengthen it. The lack of this sustaining psychotherapy is what drives so many to Eddyism and other fads which make their appeal to the mind. Altruism, idealism, public questions and service, photography and other hobbies—interests of this kind are a potent factor in keeping well and in aiding in the struggle against disease.

Yarotzky takes up, in turn, chronic disease of the various internal organs, showing the influence of the mind in their course and even on their inception, especially excessive secretion of hydrochloric acid with its evil train. He emphasizes that the physician, with his examinations and directions, focusses the patient's attention on some organ and thus, by suggestion plus autosuggestion, may induce exacerbation of existing derangement. He urges the physician to trust more to his intuitions, explaining how these are the crystallization of a lifetime of subconscious impression from the environment. The wearing out of organs is merely a subordinate factor in old age. The richness or the poverty of the individual's mental life is the predominant factor. In conclusion, Yarotzky reiterates that the physician is too apt to pay scant attention to the patient's psychic life, and yet this is the key to success for his other measures in some cases.

ALIENISTS AND PSYCHIATRISTS.

Southard[5] proposes that the term *alienist* be used of experts in the forensic or medicolegal subdivision of mental hygiene, dealing with *insanity,* and that the term *psychiatrist* be used of medical experts concerned with *mental diseases.* As a minor point in nomenclature, it is proposed to distinguish the *alienistics* of a case from the *psychiatry* thereof. As insanity stands to mental disease, so alienistics would stand to psychiatry. Alienistics would be primarily a branch of law, psychiatry a branch of medicine.

Five or six subdivisions of mental hygiene are mentioned as existent or developing. *Public* mental hygiene has the two well-established subdivisions, institutional and medicolegal. *Social* mental hygiene has produced effective social service. It is a question how far character handicap work can go; but there are signs of a specialty in mental hygiene here also, using practical psychiatric, social-service and social-psychological categories. *Personal* or *individual* (medical) mental hygiene is founded on the achievements of practical psychiatry which may now be regarded as a specialty independent of institutional mental hygiene and of "alienistics." But metric psychiatry is gaining ground, following the work of Binet, and "mental tests" promise to be of value, not only in "mind-lack" and "mind-loss" questions of practical psychiatry, but also (at least negatively) in the field of character handicap work in employment and vocational choice.

THE VALUE OF THE WASSERMANN REACTION.

Symmers and Darlington's[6] investigations lead them to the following conclusions as regards the value of this reaction:

1. Depending on the antigen employed, the Wassermann reaction in the living patient, as carried out at Bellevue Hospital, gives a negative result in from 31 to 56 per cent. of 331 cases in which the characteristic anatomic signs of syphilis are demonstrable at necropsy.
2. The Wassermann reaction in the living patient is positive in at least 30 per cent. of cases in which it is not possible to demonstrate any of the anatomic lesions of syphilis at necropsy.

MILITARY PSYCHIATRY.

FUNCTIONS OF AN ARMY PSYCHIATRY CLINIC.

In the matter of advanced psychiatric centers Crinon[7] urges the importance of recording on the wounded man's card, from the very first, the notice of nervous or mental upset. Psychic changes should be recorded as scrupulously as the organic. It is now officially ordered that the concussion syndrome has to be specified on the card. The "psychically disabled" should have their record as complete from the first as is the rule for the physically maimed. This would permit also suitable measures from the very first, when they are much more likely to prove effectual. The influence on the brain of physiologic disturbances from shell shock or toxi-infections should be arrested as early as possible. To neglect this allows the psychic changes to deepen and crystallize into delirium or confusional states. All this requires advanced psychiatric stations. Their existence is still further justified by the important task of sifting out the men to be sent to the nerve centers and the psychiatry centers farther back from the front. Many men only lightly affected could do well in them and be promptly restored to full duty. Sent back into the interior, their psychic disturbances become more and more confirmed and durable. At the best, the men are returned after months of convalescence when, if they had been given specialist treatment close to the front, they would have been in the ranks again in much less than a month. Toxic delirium of alcoholic origin is often mistaken for a more permanent trouble. It requires only a special course of internment and treatment which is as available in a well-equipped, advanced psychiatric station as elsewhere. Men subject to convulsions can also be kept under observation here, and the nature and number of their attacks determined. Crinon thinks it is as absurd to exempt men from service on account of a single epileptic seizure—which is now the regulation—as to exempt those who have not good teeth.

NEUROTICS IN MILITARY SERVICE.

Gordon[8] directs attention to the fact that types, varieties, and subvarieties of neurotics are many. While all are unfit for actual military work at the firing line, some of them nevertheless are capable of performing some duties of a nature different from fighting. A good number of them could be utilized for work of a secondary character behind the firing line and thus release the men who are more fit to face the enemy. A large contingent of good and strong men will thus be added to the fighting force. The home examining psychiatrist, after a profound study of the recruit's personality, will determine the variety of the neurosis and the degrees of its development, and will thus be able to make suggestions and recommendations to the military authorities as to the kind of work a given neurotic individual could be assigned to. A systematic plan can be worked out by which the examining psychiatrist will familiarize himself with the multifarious duties incidental to military service in wartime so as to be able to make the proper recommendation in behalf of those neurotic men who are not totally rejected.

WAR NEUROSES IN WAR PRISONERS.

Lust[9] cites Mörchen's report that he found only five cases of war neuroses among the 40,000 war prisoners at the Darmstadt prisoners' camp. The majority reached the camp within three days of having been taken prisoner, and a number came from the Verdun region. There is every reason to assume that they had been subjected to the same kind of mechanical and emotional stress as the German soldiers, and yet the hysteric nervous disturbances, so common among the soldiers, were found only in one among each 8,000. Lust has also recently reviewed 20,000 war prisoners to select those to exchange, and he, too, found the war neuroses rare among both military and civilian prisoners of war. He calls attention to this as disproving certain prevailing theories as to the mechanical and psychic causes of war hysteria.

EXHAUSTION PSEUDOPARESIS.

Hunt[10] describes a fatigue syndrome simulating early paresis, developing under intensive military training. His cases were characterized by certain somatic symptoms strongly suggestive of early paresis, namely, the pupillary changes, the tremors, and the disturbances of articulation. This triad of symptoms was so manifest, and resembled so closely those observed in the early stages of paresis, that the clinical diagnosis appeared reasonably centain—an interpretation which seemed all the more probable as he had already demonstrated cases with apparently similar symptoms in which the diagnosis had been confirmed by serologic tests of the blood and cerebrospinal fluid. It was a surprise, therefore, when the serologic reports were returned negative and the various symptoms gradually subsided under appropriate rest and treatment. The gradual abatement and final disappearance of all suspicious symptoms at the end of a week's rest would indicate an exhaustion of the cerebral centers as the probable cause. Under still greater provocation of stress and strain it is not improbable that such fatigue symptoms might even be the forerunner of a more serious type of exhaustion neurosis or neuropsychosis.

EXPERIMENTAL SHELL SHOCK.

Mairet and Durante[11] reproduced, with rabbits, the violent shock from explosion of a large shell in the close vicinity without direct contact with particles of the shell. Five of the twelve animals died in the course of five minutes, one hour, or one to thirteen days. The others, after a brief, stunned condition, with acceleration of the respiration, and transient agitation, rapidly recovered and were slaughtered later. Minute hemorrhages were found numerous in the lungs, spinal cord and nerve roots, and a number of small vessels in the gray substance of the cortex had ruptured into the sheaths of lymphatics. The smallness of these hemorrhages and the fact that they did not diffuse testify that they occurred instantaneously in consequence of the depression which followed the compression. These histologic hemorrhages entail anemia of the smaller territories beyond them, which explains the areas of softening to which Jumentie and Claude have called attention. These very numerous, but very restricted, lesions correspond to the symptomatology of men suffering from shell shock, especially the amnesia which may result from the anemia in certain small areas, the neuralgia, and the pains at the emerging points of the nerves. The latter correspond to the intraradicular hemorrhages found in the rabbits. This may also be the explanation of certain cases that have been published, in which the clinical picture of tabes came on suddenly after shell shock, with negative Wassermann reaction and a rapid course. It may also explain the galloping course of general paralysis after concussion from an exploding large shell.

A DISTRICT ASYLUM AS A WAR HOSPITAL FOR MENTAL INVALIDS.

Hotchkis,[12] after showing the administrative changes necessitated by the conversion of an asylum into a war hospital, gives an analysis of cases admitted during the first year to the Renfrew District Asylum. Of these, 111 were non-expeditionary, and 831 had served in one or other of the expeditionary forces. The paper deals with the latter class alone, which included five German prisoners. The analysis of these was as follows:

Manic-depressive—188 cases (21 per cent.). Mania, melancholia and stupor. Resembled civilian cases in their symptoms, modified by the experiences they had passed through. A great many had had previous attacks.

Alcoholic Insanity—152 cases (18 per cent,). The delirium tremens cases exhibited two types—one who broke down as soon as the alcohol was cut off on going on board the leave boat, the other showed no signs till again in the firing line. In contrast to these were the chronic delusional cases—generally elderly men stationed at the base. Another class exhibited various symptoms: confusion, depression, excitement, and generally always hallucinations. The campaign precipitated the mental breakdown in all these alcoholic cases, and 18 of them were cases of cut throat.

Mental Deficiency—151 cases (18 per cent.). Included all degrees of weak-mindedness, and divisible into those who were vicious or moral imbeciles (37—mostly habitual criminals) and ordinary defectives—these latter proved useless and often dangerous (loading their rifles without orders) to their comrades. Some of these cases exhibited confusion, acute excitement or depression from which they recovered.

Confusional Insanity—134 cases (16 per cent.). Twenty-seven exhibited acute symptoms. Many were irritable, had tremors and hysterical symptoms. The majority of these cases occurred on active service, from mental or physical strain, and their appearance suggested a neurotic temperament.

Dementia Precox—118 cases (14 per cent.). Of these 93 were simple, 11 catatonic, and 14 paranoid. (Many of the manic-depressive cases may ultimately prove to be really cases of this affection.) Some of these cases broke down before they had reached the firing line. It is impossible to say whether the patients in this group would have carried on in civil life without a breakdown.

Paranoia—44 cases (5 per cent.). Here the delusions had, in many cases, been present before enlistment and the campaign accentuated them.

General Paralysis—22 cases (2 per cent.). The ordinary symptoms were present. In a few of these cases the progress of the disease was not materially affected by the campaign.

Other Organic Brain Conditions—These were single cases of tuberculous meningitis, hemiplegia, destruction of brain tissue from a kick from a mule, cerebral abscess secondary to a gunshot wound, and syphilitic meningitis.

Few cases of head injury exhibited mental symptoms.

Epilepsy—7 cases. All except one had epilepsy prior to enlisting.

Secondary Dementia—7 cases. All transfers.

Not Insane—4 cases. One, a malingerer with aphonia, was anesthetized three times with ether and wakened when shouting, but resumed silence on realizing that he was speaking. He admitted recovery prior to the fourth anesthetization.

Mental Instability—A useful term to apply to recovered cases who, on account of previous attacks, should return to civil life.

500 expeditionary cases were discharged. Of these 155 returned to duty, 139 were sent to asylums, 40 recovered, and 111 were removed, "relieved," by their friends. Forty-two were removed to other hospitals for treatment of their bodily condition; 11 died, and 2 escaped.

"STRESS OF CAMPAIGN."

In an interesting article, under this title, giving the reactions of the different forms of mental disease to war strain and shock, Norman[13] concludes that the war has apparently produced no new nervous or mental disorders. It has increased the number of such cases, and has thus caused some of them to be brought to the attention of many observers who would not, in the ordinary course of events, have taken cognizance of them. The difference is thus more in the perspective from which they are regarded than in the conditions themselves. Neurasthenia and "shell shock" have provided ample scope for study and for the formulation of more or less plausible theories as to their causation. Both terms have been used loosely and in a vague way. Further investigations of the function of the ductless glands may throw light upon the part which they play in the matter. In the meantime it is interesting to note—as Crile has pointed out—the extremely suggestive nervous condition of patients suffering from Graves' disease, and the general influence of disordered function in the thyroid gland. Much ground has to be covered, however, before satisfactory conclusions can be reached. It is not yet settled—if we may judge by the conflict of opinion—what is the best method of proceeding to investigate certain of these problems. That being so, we may look for still more darkening of counsel; and one of the most certain results to be anticipated is an accession to our terminology, if not a corresponding increase of our knowledge.

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LETTERS FROM TWO PATRIOTIC BOSTON PHYSICIANS.

The following letters from two patriotic Boston physicians, which have recently appeared in the daily press, deserve republication in full at this juncture, as evidence of the strong sentiment of the medical profession in this international crisis, and the duty of each of its members to consider whether he is fulfilling the whole of his obligations of service to his country.

A DOCTOR'S CALL TO THE COLORS.

The medical profession of the country has responded nobly to the call for men to care for our soldiers and sailors at home and abroad—but more are urgently needed and at once. The Surgeons-General of the Army and Navy ask for more men, 7000 at least—are they to ask in vain?

Already there are on duty or in training 16,000 members of the Medical Reserve Corps, to whom the care of 97% of our men will fall, and orders are about to be issued calling every man who has a commission in the corps to active duty with the alternative of discharge. That means that there is no longer a "reserve"; that every man of them is needed and many more, too.

Massachusetts has furnished the Army with 843 men, 14.2% of its medical population; but where does she stand in the percentage column of States? No. 31—nearly two-thirds the way to the foot of the line. One feels humiliated to see State after State, not one more able to help than she, with higher percentages, reaching even as high as 24%.

Are our men waiting for something to happen—it is happening now. Do they need something to stir their sluggish blood—let them think of Dr. "Pete" Howe, whom we all loved, who entered the British service because his poor eyesight made it difficult to get into our Army, and who was killed doing his duty and lies in an English military cemetery with the American eagle on the cross at his head. Are they afraid of their lives, their health, their money, their ease? Or are they only half awake? The need of the boys at the front and in the camps is more urgent, more vital than of those who are left behind, and the public must understand that there will be a scarcity of doctors as of wheat or coal. Because one cannot get his or her favorite doctor let it not be thought that the community is totally depleted and everybody is going to die. We want the best men for the service. We must have them.

Some men must stay behind, for a certain number are necessary to the community, as practitioners and teachers, while many are physically unfit to go.

The time has come when the man who stays at home for good cause—in other words, who is exempt—should have a designating badge like that of the Volunteer Medical Corps, which is composed of those who would be eligible for the Medical Reserve Corps were it not for age, physical disability, institutional or communal needs. This might shame some men into enlisting who could not be reached in any other way.

The time has also come when every man should search his conscience, should truthfully decide whether he is a "slacker" or not, whether he could not go were he willing to give up his ease, luxuries and creature comforts.

Heaven forbid that a medical draft should be necessary. Dr. Mosher is right when he says that "the only test of Americanism today is service. By this test all men are being silently judged."

"Choose ye this day whom ye will serve."

Samuel J. Mixter, *Major M.R.C.*

THE NEW TEST.

A year this month our country has been at war. Each day is greeted with a new casualty list. The list is short, but with our men holding their bit of the line it must grow. To find one name there means for some family the full measure of sorrow and empty years to come. For twelve months the call for loyalty and service has been ringing through the land. It has fallen not only on quick ears, but on many that cannot or will not hear. It is not enough that your father or his father served his country. With their blood in your veins, you should be rendering service now. Read the army lists. They are filled with foreign names. Their owners often put to shame for quick and full response those who claim long lineage on our soil. After twelve months of war each one of us must ask himself whether or not he is doing his full duty. The question cannot be evaded, because the call for service still rings clear. Have you given full service? Or have you made the most of the excuses always put forth in times like these by those content to let their brothers serve? Have you salved your conscience with part-time service, when full service would mean sacrifice for you or for your family? Remember that our Allies no longer speak of service as a sacrifice, but as a privilege. Are you still a spectator? Are you to take any part except in the cheering—if there is any—when the victory is won? Whatever your ancestry, whatever your name, the only test of Americanism today is service. By this test all men are being silently judged. Its findings will be passed down in households to the end of this generation. Old friends and new must face it. A re-rating of the nation is in progress. Already in many instances the findings of the new test have caused astonishment and sadness. The test is forced upon us. We cannot stop its relentless application—we cannot reverse its judgments. It is born of the agony of the world. From now on its findings will unite or divide every group in which men assemble for their daily occupations, and every family throughout the land.

Harris P. Mosher, *Major M.R.C.*

THE CHILDREN'S YEAR.

One of the most remarkable developments of the war, a victory not heralded on front pages, yet which in time to come will be noted by all students of human welfare, is the saving of infant life in England during the second year of the war. The report of the chief medical officer of the Local Government Board, Sir Arthur Newsholme, published in 1917, shows for one sanitary district after another throughout England and Wales the number of babies who died before the war, those who died the first year of the war, and the deaths for the second year of the war, 1916.

It is startling to turn over the pages of this report and to see that the general social confusion of the first year of the war resulted in a large increase in the number of babies who died. But in the second year of the war, when the Local Government Board was enabled to grant financial aid to the various sanitary districts and to secure coöperation in its policy of health visitors for every mother and baby, of health centers for consultation, of hospital care for sick mothers and babies, the rate went down not only far below the rate for the year before, but far below the rate previous to the war.

This record of life-saving in the midst of the strain of a war, by means so simple and so at command, is, we believe, entirely without parallel.

In the light of England's experience, and with the conviction that all will realize that the guarding of child life behind the lines is a patriotic duty, the Children's Bureau asks us to call the coming year Children's Year, and it has given into the hands of the Women's Committee of the Council of National Defense for execution a program for child welfare, advocating those methods of work which have already proved efficient in saving children's lives in our own and other warring countries.

To inaugurate the Children's Year, a nationwide weighing and measuring of babies and children of pre-school age will be made. This will show each community what its children need if the rising generation is to be free from those physical defects which the draft has revealed.

The Federal Children's Bureau, in cooperation with the Council of National Defense, has set apart a Children's Year throughout the Nation, from April 6, 1918 to April 6, 1919. The first drive in the campaign is the weighing and measuring of all children under five. Boston aims for a 100% registration, and counts upon her professional social workers to help make this possible.

The relation of weight and height to health has already been proved. Unless the deviations from the average of the healthy child are known, parents, physicians and social workers will be unable fully to utilize the facilities provided by the community to secure healthy and normal child-life.

There will be about 100 weighing stations throughout the city, with five volunteers in charge of each station. This establishment of the stations by districts has been worked out through the coöperation of the Boston Equal Suffrage Association for Good Government, whose ward organization is admirably adapted to a city-wide campaign.

The Baby Hygiene and District Nursing Association have offered their equipment and members of their staff for certain departments of the work.

AN IMPERATIVE APPEAL FOR MEDICAL OFFICERS.

An urgent and imperative appeal has just been issued by the Surgeon-General of the United States Army, for doctors for the Medical Reserve Corps.

There are today 15,174 officers of the Medical Reserve Corps on active duty, and the Medical Department has reached the limit of medical officers at the present time available for assignment. With these facts before the medical profession of this country, we believe that every doctor who is physically qualified for service, between the ages of 21 and 55 years, will come forward now and apply for a commission in the Medical Reserve Corps.

The Surgeon-General says: "So far the United States has been involved only in the preparatory phase of this war. We are now about to enter upon the active or fighting phase, which will make enormous demands upon the resources of the country." The conservation of these resources, especially that of man power, depends entirely upon an adequate medical service.

Drafts of men will continually follow drafts, each of which will require its proportionate number of medical officers, and there are at this time on the available list of the Medical Reserve Corps, an insufficient number to meet the demands of these drafts.

The real necessity for the complete mobilization of the entire profession is imperative. It is not a question of a few hundred men volunteering for service, but of the mobilization of the profession for the conservation of the resources of this country. Let every doctor who reads this editorial and appeal from the Surgeon-General, which appeal is based upon dire necessity, act promptly and present his application for a commission in the Medical Reserve Corps at the nearest Medical Examining Board. If you are not informed of the location of your Board, the Editor of this Journal will advise you.

STAND BEHIND THE BOYS.

How many doctors have applied this now very expressive phrase to themselves? There is nothing that puts more heart in and gives so much confidence to a soldier in the thick of a fight as the thought that if he does suffer a casualty, he will receive proper medical care and attention. What are you doing in this respect?

There are many boys, sons of your patients or friends, who have been or will be called into the service, and what a source of consolation it would be to the parents to know that possibly their own doctor might be the one to look after their boy, and they will welcome your acceptance of a commission in the Medical Reserve Corps and compliment you for so doing.

The opportunity for you to do the most good in a professional way to the greatest number of people, is to offer your service to your country through the Medical Reserve Corps. Do not think longer about it, but apply at once to your nearest Medical Examining Board, and if you are not informed of its locality, the Editor of this Journal will supply the necessary information.

Stand by our boys, your boys, their boys. Remember the gallant French in '76; the British who stood by Dewey in 1898; the Garibaldis who were always for Liberty.

The rapid expansion of the Army calls for a largely expanded Medical Reserve Corps. The Surgeon-General has issued a most earnest appeal for doctors. The Department has reached the limit of medical officers available for assignment.

MASSACHUSETTS SCHOOL OF PUBLIC HEALTH.

The arrangements for the Four-Day School of Public Health to be given in Boston, May 28-31, under the direction of the Public Health Committee of the Massachusetts Medical Association, are rapidly nearing completion. It is expected that complete printed programs will be ready within the next few days.

Special efforts are being made to secure the attendance of all physicians interested in public health work, as well as public health officials from all parts of the State. The sessions are to be held in Huntington Hall and the large lecture room at the Massachusetts Institute of Technology, so that adequate provision is made for all who may attend. All persons with public health interests will be cordially welcomed. As an aid in securing the presence of public health officials, letters signed by the Governor have been sent to the chief executive of each town and city of the Commonwealth, asking that a representative be appointed to attend the sessions.

ENROLLMENT IN THE NAVAL RESERVE FORCE.

Attention at this time should be briefly called to the subject of release statements from local exemption boards. Many persons who intended to join the Naval Reserve force have waited too long, and are now unable to get release from their local boards. In not a few instances, however, these boards would be willing to let a man enroll, but will not give the statement required by the Navy Department, that he is in a class and order number so low that he is not within any current quota of the Board. Applicants for the Naval Reserve force must be American citizens, but friendly aliens with first papers will be taken in the commissary and messman branches.

MEDICAL NOTES.

Little Children Deprived of Milk.—That babies and little children are directly affected by the decreased sales of milk reported by dealers in American cities is illustrated by findings for Baltimore, made public today by the Children's Bureau of the U. S. Department of Labor.

Of 756 Baltimore children between 2 and 7 years of age, only 29% are now having fresh milk to drink, as against 60% a year ago. And only 20, or less than 3% of the children studied, are having as much as three cups a day. With the babies under 2, the Children's Bureau says, the situation is a little less serious. Apparently, their needs are more generally understood than the needs of the child over 2.

The number of families in this group who are buying no fresh milk at all has risen from 37 a year ago to 107, or 29% of those from whom information was secured, and these 107 families include one-fourth of all the children under 7. At the same time, the total daily purchase of canned milk by the families studied has increased from 25.5 cans to 84 cans.

Most serious, according to the Children's Bureau, is the general substitution in the children's diet of tea and coffee. Of the 575 children who are not drinking milk, 64% have definitely substituted tea and coffee, and 24% are "sharing the family diet," which may or may not include tea or coffee, or milk in other foods.

While the group of families studied is small, the Bureau offers the findings as fairly representative, since the information was secured and transmitted to the Children's Bureau by school nurses of the Baltimore Department of Health and by nurses of the Instructive Visiting Nurse Association and the Babies' Milk Fund of Baltimore, from all families they visited during a certain short period, provided: (1) there were at least two children under 7 years of age; (2) the family had been in Baltimore at least a year; (3) no tubercular patient was living in the family.

Various incomes are reported, but the changes in the amount of milk purchased are not unlike in the different earnings groups. Some mothers seem to realize that milk must be provided for their children, at whatever sacrifice; others, who can better afford to buy milk, do not understand its importance, and let their children go without it. The foreign-born mothers, although their incomes are slightly lower than the incomes of the native white mothers, have, more generally than any other group, continued to buy milk. Almost half of the foreign-born mothers have either continued the amount purchased last year or increased it, and only 1 in 10 of the foreign mothers (as against 1 in 3 of the other mothers) are now buying no milk at all.

The Children's Bureau states: "Taking a pint and a half of fresh milk as the desirable daily allowance for the average child, these 756 children were having last year on an average, only 40% of what they should have had; this year their daily average has dwindled to 14.4% of this allowance.

"The work of Children's Year should emphasize in every community the importance of fresh milk in the diet of young children. Without proper nourishment, children cannot keep well and free from physical defects, and a campaign of education on the feeding of children is an essential part of the saving of 100,000 lives during the second year of the war."

THE SANITARY DANGERS FROM DOMESTIC PETS.—A report on an epidemic of virulent smallpox in one of the Southwestern States, submitted to the Surgeon-General of the Public Health Service by one of the officers of that corps, sets forth with renewed emphasis the rôle that domestic pets may play in the transmission of disease, especially among children. The instance cited was that of a fatal case of smallpox in an infant in arms. The nearest case of the disease was in a house a block or so distant, and although the two families had no social relations, this apparently did not deter a dog belonging to the infected family from dividing his attention impartially between the two homes, eating at one place and sleeping at the other.

In no other way could the source of the infection of the baby be explained than that the dog fondled by the children of the smallpox family carried the virus of the disease to the neighbor's baby. Similar instances have been noted before in connection with smallpox transmission, and cats and dogs both have been incriminated as carriers of plague-infected fleas—cases of bubonic plague so contracted having been observed by Public Health Service officers working in recent plague epidemics. The same household pets also have been charged in certain instances with the responsibility of carrying the infection of diphtheria, scarlet fever, and other communicable diseases of children, as well as various intestinal parasites.

A disease that annually causes more than 110 deaths in this country is rabies, and the rôle of domestic animals in spreading this disease is definitely proven, speculation or circumstantial evidence being discarded.

Altogether, therefore, it is perfectly evident that the citizen who keeps domestic pets maintains at the same time a very potential source of danger—a sanitary menace to his own household and to that of his neighbor. While this aspect of the subject applies year in and year out, it may well behoove the city dweller in these times of urgent demand for food conservation to take serious counsel with himself as to whether he is justified in continuing to keep his dog or his cat, both of which are casual sources of mental annoyance to neighbors, as well as agents for graver potentialities.

ANNUAL REPORT OF THE NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS.—The third annual report of the National Committee for the Prevention of Blindness has been issued for 1917. During the past year the function of the committee as a bureau of information has grown enormously, and letters have been received from all over the world, as well as from all quarters of the United States, requesting advice and assistance. Several publications have been made during the year, those of most importance being "Eye Hazards in Industrial Occupations," "Saving Sight a Civic Duty" and "Bright Eyes—How to Keep Them Shining." The annual summary of statistics, gathered from schools for the blind, which is taken as some indication of how the educational propaganda of a dozen years is affecting the situation as regards children's blindness, shows a slight reduction over last year's report, and the encouraging fact that eleven years of work have seen a diminution in the percentage of children entering the schools for the blind because of eyes destroyed by inflammation of the new-born from 28.19% in 1906-7 to 18.4% in 1916-17. Mr. Gordon L. Berry, field secretary of the Committee, was called upon to serve as lecturer to the soldiers in the army camps by authority of the Surgeon-General's Department, and entered upon the work; but feeling that he could be of more service in France, he volunteered for work with the Y. M. C. A.

abroad, and was immediately accepted. During the year various lectures, exhibits, and slides prepared by the committee have helped to disseminate knowledge regarding the prevention of blindness.

WAR NOTES.

Comparative Birth and Death Rates in War.—Statistics published in the daily press show that during a recent week the births and deaths in the six largest German cities were as follows:

Berlin, 379 births and 522 deaths; Hamburg, 181 births and 404 deaths; Leipsic, 95 births and 178 deaths; Munich, 155 births and 251 deaths; Cologne, 182 births and 254 deaths; Frankfort, 70 births and 106 deaths; making a total of 1062 births and 1705 deaths.

During the same week the four largest Austro-Hungarian cities showed the following figures:

Vienna, 298 births and 904 deaths; Budapest, 249 births and 399 deaths; Prague, 6 births and 213 deaths; Trieste, 13 births and 82 deaths; making a total of 622 births and 1598 deaths.

During the last week of March the total births in London were 1240 and deaths 1358. Adding the eleven cities together, the deaths exceeded the births by 1737, which, continued for a year, would amount to an actual decrease of 90,324 in the population.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending April 27, 1918, the number of deaths reported was 273, against 258 last year, with a rate of 18.15, against 17.42 last year. There were 45 deaths under one year of age, against 37 last year.

The number of cases of principal reportable diseases were: diphtheria, 71; scarlet fever, 24; measles, 383; whooping cough, 66; typhoid fever, 3; tuberculosis, 50.

Included in the above were the following cases of non-residents: diphtheria, 14; scarlet fever, 5; measles, 1; whooping cough, 3; typhoid fever, 2; tuberculosis, 1.

Total deaths from these diseases were: diphtheria, 3; measles, 7; whooping cough, 4; tuberculosis, 32.

Included in the above were the following non-residents: diphtheria, 1; whooping cough, 1; tuberculosis, 2.

Report of the Department of Medico-Social Work of the Boston City Hospital.—During the past year the Department of Medico-Social Work of the Boston City Hospital has been incorporated and recognized as one of the Hospital activities. The fact that the public is realizing the aid which the medico-social worker can render in spreading knowledge of preventive medicine, and so helping to suppress contagious disease, is shown by the fact that in June, 1917, the City made an appropriation to cover the salaries of five workers (approximately one-third of the total expense). The Hospital Trustees seem to believe that the work is indispensable. A year ago there were seven workers; there are now twelve, including the director and two clerical assistants. A large number of cases have been followed up during the past year, and possible scope of the work with chronic patients has been investigated. There is much need of work with sick children, and their problem in connection with medical and surgical house services has been studied. Work has also been done in connection with house- and out-patients from the Gynecological and Maternity Services. Too much emphasis cannot be laid on the importance of this most necessary work, and it is to be hoped that it will constantly increase in scope.

The Massachusetts Medical Society.

NOTES FROM THE DISTRICT SOCIETIES.

District Correspondents.

Berkshire, A. P. Merrill, M.D., Pittsfield.
Bristol North, Arthur R. Crandell, M.D., Taunton.
Bristol South, Edwin D. Gardner, M.D., New Bedford.
Essex North, T. N. Stone, M.D., Haverhill.
Essex South, H. P. Bennett, M.D., Lynn.
Hampden, Laurence D. Chapin, M.D., Springfield.
Hampshire, E. E. Thomas, M.D., Northampton.
Middlesex South, William C. Hanson, M.D., Belmont.
Norfolk South, Daniel B. Reardon, M.D., Quincy.
Plymouth, Alfred C. Smith, M.D., Brockton.

Essex South District Medical Society.—Dr. Stephen Rushmore of Boston was the guest of the Lynn Medical Fraternity March 30 and read a paper on "Prenatal Care."

Dr. George H. Gray of Lynn has recently been commissioned as major in the Medical Reserve Corps and has been ordered to report for duty at Camp Beauregard, Louisiana. Dr. J. Armand Bedard of Lynn recently received an appointment as one of a corps of physicians selected for tuberculosis work in France by the Rockefeller Institute. Word was recently received announcing his safe arrival in France.

Dr. Martin Peck of Lynn and Marblehead has received a commission as first lieutenant in the Medical Reserve Corps.

Dr. M. R. Donovan, recently appointed health commissioner of Lynn, took office April 1.

H. P. Bennett.

Hampden District Medical Society.—Following is a corrected list of members who have entered the Army and Navy up to date of going to press.

W. J. Bostick, J. M. Birnie, H. F. Buddington, H. F. Byrnes, E. H. Burke, O. R. Blair, P. M. Cort, J. M. Claffy, E. B. Corcoran, W. A. R. Chapin, E. L. Davis, E. C. Dubois, J. H. C. Gallagher, A. H. Galvin, E. A. Gates, G. D. Henderson, D. E. Harriman, M. B. Hodskins, P. Kilroy, C. F. Lynch, P. M. Moriarty, V. S. Merritt, J. M. Maloney, L. E. Mannix, H. C. Martin, J. H. Quinn, R. A. Rochford, S. D. Rumrill, J. F. Streeter, M. J. Stoddard, G. L. Schadt, J. M. Tracy, W. R. Weiser, H. A. Lanpher, B. Rabinowitz, E. P. Halton, H. Zimmerman, C. A. Whitcomb, W. P. Ryan, A. H. Riordan, R. A. Green, W. J. Dillon, J. J. Cosgrove, H. Caro, M. D. Chisholm, R. E. Cleary, W. F. Greaney.

The annual meeting was held at Hotel Worthy, Springfield, on Tuesday, April 23, at 4 p.m. The following officers were elected for the ensuing year: president, Arthur L. Damon, of North Wilbraham; vice-president, George L. Gabler of Holyoke; secretary and treasurer, Hervey L. Smith of Springfield.

Papers were read as follows: "The Clinical Significance of Chemical Blood Examinations," by Dr. John E. Overlander; "The Prostatic: How Shall He be Managed?," by Dr. F. B. Sweet.

The censors will meet for examination of candidates for admission to the Society at the Hotel Worthy, Springfield, on Thursday, May 2, 1918, at 4 p.m.

L. D. Chapin, *District Correspondent.*

Plymouth District Medical Society.—The annual meeting of the Plymouth District Medical Society was held in Brockton on April 18, 1918. Forty-five members, representing all parts of the county, were present, with Dr. Nathaniel K. Noyes of Duxbury, presiding.

Dr. Gilman Osgood of Rockland outlined plans for the coming year. This will be a war year, he said, and all papers will bear on medical and surgical work in the war.

Dr. Joseph Frame of Rockland was named to read a paper at each meeting, and he will keep in touch with members in the service abroad. The other officers chosen were: vice-president, Dr. Frame, Rockland; secretary and treasurer, Dr. Alfred C. Smith, Brockton; commissioner of trials, Dr. Francis J. Hanley, Whitman; censors, Dr. Fred J. Ripley, Brockton, supervisor; Dr. James H. Drohan, Brockton; Dr. Joseph Frame, Dr. Walter W. Fullerton, Brockton, and Dr. Richard B. Rand, North Abington. The councillors elected were: Dr. A. Elliott Paine, Brockton, nominating councillor; Dr. Frank G. Wheatley, North Abington, alternate, and Dr. Charles E. Lovell and Dr. Alfred A. MacKeen of Whitman, and Dr. Fred J. Ripley, Brockton. The orator for 1919 will be Dr. Charles Hammond, Hanover.

The election of officers was followed by the reading of the manuscript of Dr. Frank E. Wheatley, the orator for this meeting. In his absence, because of service at Fort Oglethorpe, Ga., his paper on "Roentgenology in the American Army," was read by his father, Dr. F. G. Wheatley.

The other speaker, Dr. John T. Bottomley, of the Carney Hospital, spoke on "Cancer." Discussion on this topic was led by Dr. S. W. Goddard and others, from the surgical and medical standpoints.

The mid-summer meeting will be arranged by the officers.

A. C. Smith.

Miscellany.

OWEN AND DYER BILL.

The following letter from Dr. Franklin Martin through Major John D. McLean, M.R.C., Secretary of the Committee on States Activities of the General Medical Board of the Advisory Commission of the Council of National Defense, has been received by the Secretary of the Massachusetts State Committee, with reference to the Owen and Dyer Bill now pending before the National Legislature:

1. In order to acquaint your members with the purpose of the bill introduced February 5 by the Hon. Robert L. Owen, Senator from Oklahoma, and Hon. Leonidas C. Dyer, Representative from Missouri, an identical measure (S. 3748, H. R. 9563), we enclose copy of a speech made by Senator Owen, July 20, 1917, when introducing the original bill, and for which the present measure is a substitute, having the same substance and purpose.

2. While the medical service is far better equipped than ever, and while its responsibilities are greater, it has no increase in authority. Disease and death have followed in armies with inadequate medical service, and in which coördination of medical and line officers has been lacking. Line officers are schooled to attach importance only to recommendations from men of equal or superior rank.

3. The medical service is looked to by the nation at large for great aid in the creation of an effective fighting force, and it is looked to particularly by the parents and relatives of our young citizen-soldiers to safeguard their health; but such safeguards cannot be assured by the medical branch unless the medical officer is clothed with rank sufficient to influence adoption of the recommendations which he knows are for the good of the army and of the nation.

4. Not for increased pay, nor for the purpose of stimulating patriotism, nor to satisfy pride—but in order that the medical men may render their best service, is this legislation being sought. Men of the highest standing in the profession, at great personal sacrifice, are in active military service with the rank of major. They are giving their time and services uncomplainingly, but they know that their branch of the great work is handicapped because few of its representatives are given high enough rank to insure the attention vitally necessary. A far smaller proportion of medical officers than of line officers are eligible to advanced rank.

5. A way to insure attention for the bill would be to have medical societies pass resolutions, sending copies to the President, the Secretary of War, the Vice-President, Chairman George E. Chamberlain of the Senate Committee on Military Affairs, Chairman S. Hubert Dent, Jr., of the House Committee on Military Affairs—and also to have letters written by *laymen* to Senators and Representatives.

The following extracts from Senator Owen's speech above referred to may be taken as evidence of the arguments advanced by the proponents of the bill:

"We have no desire to recall the sad story of typhoid fever epidemics among our soldiers in 1898 unless we may profit by doing so. It may be well for us to remember that out of a total of 200,000 enlisted men in that war, more than 20,000 developed this disease. But, says one, vaccination now prevents altogether or greatly lessens the chances of developing typhoid fever, and such an epidemic can never again occur. This may be true, and is undoubtedly partly true, at least, of typhoid fever; but there are other diseases for which, unfortunately, we have no protective vaccination. Some of these diseases are diarrhea, dysentery—both bacillary and amebic—scarlet fever, measles, various forms of meningitis, poliomyelitis, pneumonia, tuberculosis, etc. All infections have not yet been conquered. Among the causes of the fearful diseases of 1898—and the causes were many—was the lack of authority on the part of the medical officer. There is abundant evidence of this in various Government documents.

"On July 17, 1898, the chief medical officer at Chickamauga addressed a letter to the Adjutant General, containing recommendations concerning the improvements of sanitary conditions. In brief, the letter contained the following recommendations:

"1. That the Signal Corps, which had occupied the same site for several months and which was crowded, should be moved.

"2. That selected places should be designated as dumping grounds and all the waste should be collected and deposited on these places instead of being scattered through the camp.

"3. That, so far as possible, all camp sites should be changed.

"4. That the hospital of the first division of the corps be moved from the unsanitary position they occupied to a more healthful location.

"5. That the village of Lytle, which was a sanitary menace to the troops, should be cleansed.

"6. That all condemned sources of water supply should be effectually closed.

"7. That only filtered or boiled water should be used by the soldiers.

"8. That all hucksters selling doubtful food or drink should be expelled from the camp.

"9. That there should be careful supervision of all food and drink sold in the canteens.

"These recommendations, made in July, were unheeded at the time.

"In his testimony, Gen. Brooke spoke of the letter containing the above recommendations as follows: 'I did not regard his letter in a very serious sense. I do not know how he came to write it. There was much complaint in that camp from men of his own profession as to his action. He caused me more trouble and annoyance than any one ever did.'

"Had the recommendations contained in this letter which annoyed the senior line officer been taken seriously in July the fearful harvest of sickness and death in August might have been averted.

"Nineteen years have passed since our little war with Spain, and we have crossed the threshold of a great war with Germany, Austria, Bulgaria and Turkey. This war begins with the medical officer possessed of no more authority than he had in 1898. Will his recommendations be as futile as they were then? The medical profession has always been responsive to its country's demands, whether in war, in pestilence, in flood, or in famine. Conscription has never been necessary to fill its quota. Medical officers will do their best and will present their recommendations to superior line officers, but they realize that these recommendations are likely to receive scant attention, and that the medical officer will be compelled to work under a heavy handicap. The Government stamp placed upon the medical officer indicates the opinion that the Government has of the value of his services, and that his recommendations will receive from line officers any different consideration from that accorded them in 1898 is not probable. At present the Army Medical Corps has no representation on the General Staff or in the War College.

"Will it be possible that camp sites, both small and great, will be selected as they were in 1898, without consultation with the Medical Corps? And are we justified in feeling that we may have some reminders of the experiences of 1898? According to the testimony of the Surgeon General, recently given before a medical committee, the relative number of trained medical officers is not as great now as it was at the beginning of the Spanish War. We had then seven per thousand. We have now about five per thousand.

"In 1904 the English war office was reorganized by a committee, the chairman of which was Lord Esher. In this reorganization no provision was made for a representative of the medical army corps on the general staff, or what corresponds to our War College. At the time the surgeon general complained of this action. In reply to this complaint Lord Esher's committee stated that while too much importance could not be attached to the sanitary service of the army in peace or in war, the committee could not accept the views of the surgeon general. Lord Esher's committee continued: 'The army council is not and can not be a representative body as regards the several arms and departments. The royal army medical corps exists to serve the army in a most important capacity, but the first object must be to create and maintain an army, and this is the function of the army council. To admit the principle of representation would destroy the character of the council.'

"This was the opinion of Lord Esher in 1904. Recently (*London Times*, Feb. 3, 1917) Lord Esher writes as follows: 'How much of the suffering undergone by our soldiers since the war began has been due to the shortsightedness of my committee, and notably of myself, will never be known. Certainly the control of the adjutant general's branch over the royal army medical corps was and is responsible not only for the early failure to grip the medical factors of the war, but they hampered conditions under which the surgeon general has worked. His triumphs and those of the royal army medical corps have been achieved in spite of obstacles that the subordination of science to ignorance and of elasticity to military discipline explains but can not justify.'

"The following is a list of the lieutenant generals and major generals in the British medical service as of October, 1916, taken from the British Army list of October, 1916:

1. Director-general of the British Medical Service, Sir Alfred Keogh.
2. Director-general of the British forces in France, Sir Alfred Sloggett, rank lieutenant-general.
3. Lieutenant-general and director of the British Medical Service in India, Surgeon-General O'Donnell, rank lieutenant-general.
4. Director-General Indian Medical Service, Sir Thomas Pardey Lukis, rank lieutenant-general.

ON THE KING'S STAFF.

5. Hon. William Flack Stevenson, surgeon-general.
6. Sir William Babtie, surgeon-general.
7. James Cleghorn, surgeon-general.
8. Hon. Thomas Grainger, surgeon-general.
9. Hon. Peter Stephenson Turnbull, surgeon-major-general.

SURGEON-GENERALS RANKING AS MAJOR-GENERALS.

10. Hayward Reader Whitehead.
11. James Gaussen MacNeece.
12. William Burney Bannerman.
13. Thomas Martin Corker.
14. Sir David Bruce.
15. Louis Edward Anderson.
16. Harold George Hathaway.
17. Walter George Augustus Bedford.
18. Robert William Steele Lyons.
19. Richard William Ford.
20. Tom Percy Woodhouse.
21. William Grant Macpherson.
22. Robert Porter.
23. Thomas Joseph O'Donnell.
24. Menus William O'Keefe.
25. Richard Henry Stewart Sawyer.
26. John Chislett Culling.
27. William George Birrell.
28. Francis John Jencken.
29. Francis Harper Trehern.
30. William Rice Edwards.

"Since the expansion of the British Army this list has increased, but data are not available. The above data were taken from the Library of Congress, Book G7, A2, Class U 11, pages 4, 19, 45, 46, and 1921.

"In the report of the Crimean War, there was an enormous mortality due to defective service in sanitation and in the medical, surgical, and hospital services.

"The medical officer had no authority whatever, and the line officer did not realize the effect of disregarded medical advice, and the medical officer had no rank or dignity to emphasize his advice. The same distressing consequences ensued from the same causes in the American Civil War, in the South African War, in the Spanish War, and recently in the Mesopotamian campaign. (See report below.)

"I submit a very brief extract on the recent British disaster in Mesopotamia, due to neglecting health of men:

"'Report of the commission appointed by act of Parliament to inquire into the operations of war in Mesopotamia, 1917.

"'[Extract from the Vincent-Bingley Commission's report on the Mesopotamia expedition (sec. 110, pp. 133-163), Library of Congress.]

"'There is abundant evidence that ..... lack of coördination have been important factors in the situation. Conferences were held at headquarters from time to time and plans were considered. It is stated, however, that Surg. Gen. ——— did not attend these conferences, except when the subjects discussed related directly to the medical administration. He was thus less in touch with the general situation than other heads of administrative services, and we think that this had an unfavorable influence on the working of his branch.

"'Section 111: The chief of the general staff, India, made special inquiries as to whether he was satisfied that the general staff was in sufficiently close touch with the medical services to insure that the latter knew when extra demands were likely to be made on them. Gen. ——— replied that he was "perfectly satisfied." We regret that we can not endorse this view, as there is evidence that on this and on other occasions the want of coördination and coöperation between the different branches of the staff, particularly between the inspector general of communications and the medical services, was the source of great inconvenience.

"'Section 58: We doubt whether the military authorities in Mesopotamia treated the medical services with much consideration in this matter, or whether they sufficiently realized the need for such steamers.

"'Paragraph 175: The medical personnel and subordinate staff have always been deficient in numbers. . . and it has only been the continued and untiring labors of a devoted but overworked staff that has again and again prevented an absolute breakdown.

"'Paragraph 176: We consider that the rigid economy which before the war was exercised and the spirit which this policy has engendered as to the comparative merits of economy and efficiency have contributed materially to the breakdown.

"'Paragraph 172: We are satisfied that the failure in the medical organizations had a material effect on the morale of the troops.

"'Part section 123: Surg. Gen. ——— did not represent with sufficient promptitude and force the needs of the services for which he is responsible, and in particular failed to urge the necessity ...... with the insistence which the situation demanded. Decision: We endorse the finding as regards Surg. Gen. ———, who, in our judgment, showed himself unfit for the high administrative office he held.

"'Memorandum obtained from British medical officer of high rank on my request for it.—R. S. O.'

"In the British Army at present there are three surgeons general with rank of lieutenant general; that is, the director general (Sir Alfred Keogh) at the war office, the director general of British forces in France (Sir Arthur Sloggett), and the director of British medical services in India (Surg. Gen. O'Donnell).

"Another officer, Sir Thomas Pardey Lukis, with rank of lieutenant general, is the director general of the Indian Medical Service.

"There is also a considerable number of surgeon generals with rank of major general, I think the actual number is 19, but I have not a recent army list in my possession. These officers all hold important posts, the following are some of the principal appointments:

"(*a*) Each army on the western front (we may assume an army to consist of about 200,000 troops) is furnished with a surgeon general as director of medical services of that army. This officer commands and is responsible for the entire medical service in the army to which he is appointed; he is on the headquarters staff of the army, and is the responsible advisor of the general commanding the army on all questions relating to the care and welfare of the troops, the prevention and dealing with epidemics, arrangements for the collection and evacuation of casualties in sick and wounded, the provision and establishment of field ambulances, casualty clearing stations and hospitals in the army area, the provision of ambulance trains, the establishment of convalescent camps, and very numerous other important matters.

"(*b*) A full colonel, army medical service, is with the headquarters staff of each corps and division, and his duties relate to all sanitary and medical matters in the formation to which he is appointed. He is also the medical advisor of the general commanding the corps or division.

"It would appear very advisable, in fact absolutely necessary, that the above officers hold the senior rank which they at present do.

"An enormous amount of responsibility rests in their hands and they are daily called upon to give opinion or advice on matters involving very weighty consideration and vital importance, not only of vast importance to the well-being and efficiency of the army, but also inceptions and schemes involving the expenditure of millions of pounds, *e. g.*, the defensive measures against gas attacks and the provision of gas masks and respirators have throughout been carried out by the medical service of the army this being only one—

and a comparatively minor—example of the many questions which have arisen.

"Let us suppose—for the puropse of argument—that these officers did not hold the senior rank which they do at present; would their opinion carry sufficient weight? For example, suppose that the director of medical services of an army held the rank only of colonel, every general commanding a division in that army, and also even every brigade commander, would be senior in rank to him. Could it reasonably be expected that the opinion of the director of medical services for the army would then carry the weight and authority which it does at present?

"In my humble opinion there can be only one answer, especially when it is borne in mind that these officers are specially selected for their high rank on account of their abilities and previous experience.

"(*c*) Other surgeon generals, with rank of major general, are serving in the following appointments:

"1. As director medical services on the lines of communication in France.

"2. As deputy director general at the war office.

"3. As director medical services in Egypt.

"4. As director medical services in Salonica.

"5. As director medical services in Mesopotamia.

"6. As director medical services in three commands in India.

"7. As director medical services in command in England, etc.

"Similar arguments in favor of high rank hold good with regard to all these appointments.

"Lastly, and this is a point which is deserving of sympathetic consideration, surely it is advisable to provide a certain number of higher ranks in the medical service, as in other branches of the army.

"The provision of these higher ranks and appointments which would be filled absolutely by selection, would furnish a goal for laudable ambition and an incentive to strenuous scientific work throughout the whole of an officer's service, and can, in my opinion, be productive of nothing but the very best results.

"The present campaign has furnished innumerable instances of the vast importance of the Medical Service and of the high standing and authority which it holds with the rest of the army.

"The French Army also dignified the medical department by providing for officers of the rank of major general and lieutenant general. This is also true of the Italian Austrian, German, and Japanese Armies for the same reasons.

"On January 16, 1917, Secretary of War Hon. Newton D. Baker strenuously urged upon Congress, legislation to give the Army equalization of rank in the higher grades with that of the Navy, on the ground that otherwise the detrimental effect on the Army would be too clear to require more than a statement. He said:

" 'I wish to strongly emphasize that without legislation giving the Army equalization of rank in the higher grades with that of the Navy, the branch of the Government of which I am in charge will be done an obvious injustice, the detrimental effect of which to the Army is too clear to require more than a statement. All the reasons which have been urged for the creation of these grades in the Navy, so as to efficiently handle the units properly composing a command to be under the direction of such officers of the Navy, are present in at least an equal degree in the Army. As Congress, after a full consideration of the subject, wisely decided on the advisability of giving the Navy these grades in order that it may be properly and efficiently officered, for similar reasons it should now provide similar grades for the Army.

" 'The embarrassment which arises in every branch of the service when brought in contact with other officers of foreign service of superior grade, but not existing in our service, is identical.

" 'But the constant embarrassment arising between the two services in the disparity of rank is too apparent to call for more than mention.

" 'If in all those joint matters in which the Army and Navy are concerned the Navy, by reason of the position of the superior grade is entitled to outrank the Army, the Army must perforce regard itself and be looked upon as a subordinate branch, and this is too inequitable.'

"This argument of the Secretary of War applies with precisely the same force to the organization of the Medical Department, which should not be put in the attitude of being subordinate in the field for which it is responsible. It should have a commanding position of dignity and responsibility, and when the recommendation is overruled it should be overruled by an officer of equal rank in the line of military purposes only, and then that officer should be personally responsible for the consequences, and if he errs should be subjected to immediate court-martial."

It is obvious that the increase in the personnel and rank of the medical corps, proposed by the Owen and Dyer Bill, meets the earnest approval of the heads of the various Federal Medical Services, and of the Medical Section of the Council of National Defense. On March 15, Gen. Gorgas made a direct appeal to Congress to enact his proposed legislation. The bill in its present form authorizes the establishment of a ratio of medical officers to the number of men in the army, and provides for the automatic increase of the number of medical officers with the increasing number of men. The passage of the Owen and Dyer Bill is, therefore, cordially to be advocated individually and collectively by members of the medical profession throughout the country.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR MARCH, 1918.

GENERAL PREVALENCE.

THERE were 12,766 cases of communicable diseases reported during March, which is an increase of 2816 cases over the total for the previous month and 4335 cases more than the March, 1917, total of 8431 cases.

Actinomycosis.—One case of actinomycosis was reported from Attleboro. This case was confirmed by laboratory test.

Epidemic Cerebrospinal Meningitis.—Epidemic cerebrospinal meningitis was reported to a much greater extent than for the corresponding month last year. The cases occurred in the more thickly settled parts of the State, and they apparently had no connection with military movements. As a rule, they were isolated cases with no evident sources of infection.

Lobar Pneumonia.—There seems to be a large number of lobar pneumonia cases reported. Whether these exceed the average number of cases we are unable to determine, as we have had no material on which to base an endemic index.

Smallpox.—Ten cases of smallpox were reported during March. A case reported from Boston proved to have been infected in New Hampshire. A case in Milton was first diagnosed as chicken-pox, and later proved to be smallpox. The patient in this instance was a travelling man, and no definite contact could be learned. A very mild case occurred in Lowell, which was apparently direct contact from a previous case in the family. Vaccination had been tried unsuccessfully three times. A case imported from Maine occurred at the Tewksbury State Infirmary. This patient had visited friends while in an eruptive stage, but, so far as is known, no secondary cases occurred. Five cases in Marlboro followed a case in February. In Hardwick a case of smallpox occurred in a farm hand. The only possible point of infection was a visit to a city ten days previous, and as no smallpox is known to be present in that city, the source of infection is not at all certain in this case.

Suppurative Conjunctivitis. — Suppurative conjunctivitis, or "pink eye," was reported from Amherst, in the latter part of March. This is of interest only from the fact that the cases were discovered and reported by the school nurse, and not by physicians. Physicians seem to forget that suppurative conjunctivitis in adults is reportable.

Trichinosis.—Trichinosis was reported from Brockton. Two cases occurred in one family and one in another. They were apparently infected from the same lot of pork.

Venereal Diseases.—The reports on venereal diseases are commencing to come in more freely, and we hope physicians will recognize the importance of the complete reporting of these diseases.

Diseases on the Premises of Milk Handlers.—Five cases of communicable disease occurred on farms producing milk. Three cases of scarlet fever, one each from Weymouth, Westfield and Brockton; 1 case of diphtheria from Springfield; and 1 case of smallpox from Hardwick. Isolation was enforced in each instance, and, so far as is known, no secondary cases occurred.

OUTBREAKS AND EPIDEMICS.

Diphtheria.—Eighteen cases of diphtheria were reported from Wakefield for the month. Eight of the cases occurred among boys from 10 to 14 years of age, who were attending gymnasium classes at the Y. M. C. A. An interesting feature connected with these cases was that a group of sailors from the Rifle Range were at the Y. M. C. A. at the same time and occupied the same lockers as these boys. Four days later one of these sailors reported sick, and died the following day, the cause of death being given as diphtheria. It was reported that this man came to the Rifle Range from New York about six days before and was feeling sick. Four contacts with this case also came down with diphtheria. The remaining cases in Wakefield were scattered throughout the town.

MEMORIAL RESOLUTIONS FOR DR. JOHN ALEXANDER GORDON.

To the Norfolk South District Medical Society, Gentlemen:

THE Committee on Resolutions on the death of our late Fellow, Dr. John Alexander Gordon, beg leave to submit the following report:

Dr. Gordon, after a lingering illness, died at his home on Huntly Road, Quincy, on the 24th day of January, 1918.

Dr. Gordon was born in New Perth, Prince Edward Island, seventy-five years ago. He was a direct descendant of those hardy Scottish pioneers who, one hundred and fifty years since, settled this beautiful isle.

Dr. Gordon was one of a large family and had to rely upon his own resources to make his way in life. Fortunately endowed with that ability and energy which overcome obstacles, he succeeded in obtaining a common school education, and was graduated from The Prince Edward's College. In 1866 he entered Harvard Medical School, from which he received his degree in medicine in 1871. He was a Boston City Hospital medical interne in 1870-1871.

Soon after graduating in medicine, Dr. Gordon located in Quincy, where he very soon built a very successful practice, which he maintained for nearly half a century.

For many years he was a member of the American Medical Association, the Massachusetts Medical Society, and was one of the original members of the Norfolk South District Medical Society. He was also an active member of several fraternal organizations, and held many positions of trust and honor in the city. His time and influence he gave willingly to all movements for the betterment of the people, and his advice and counsel were frequently sought in important matters affecting the welfare of the community in which he lived.

He was an active member of the School Committee from 1884 to 1889, when the world famous "Quincy" educational system was adopted.

The Quincy City Hospital owes its inception and culmination to Dr. Gordon's personal and untiring efforts. To its maintenance he contributed liberally of his time, means, and skill; and may its continued success be a lasting monument to his memory!

Dr. Gordon was an honored member of this Society. Twice he was its president, and he held the offices of councilor and censor.

Until his failing health prevented, he was a constant attendant at the meetings, and always took an active part in the discussions. He was an enthusiast in his professional work and gave his voice and influence in favor of careful scientific progression. His remarks always commanded attention, and were listened to with marked interest and lasting benefit to his hearers.

We believe that we fully realize that in the death of our associate and friend, this Society has lost a member of superior attainments, whose genial presence and valued counsel will be sadly missed; and that the community in which he lived will long remember him as an example of an honorable, charitable and conscientious physician.

Respectfully submitted,
William A. Drake, M.D.,
John C. Fraser, M.D.,
Nathaniel S. Hunting, M.D.

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NOTICE

Men Wanted for Hospital Corps, U. S. Naval Reserve Force.—There are several openings in the Hospital Corps of the United States Naval Reserve Force for qualified men between the ages of 18 and 28.

The opportunities are exceptionally good for men having a knowledge of pharmacy and medicine.

To enroll, applicants should call at the office of the District Medical Aide, Room 1210, Little Building, Boston, Mass. If an applicant is under 21 years of age, he should bring with him his birth certificate; if of the draft age, a statement from his local board to the effect that he is in a class and order number so low that he will not be needed to fill any current quota of his board.

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SOCIETY NOTICES.

The Norfolk District Medical Society.—The sixty-eighth annual meeting of the Society will be held at Masonic Temple, 171 Warren Street, Roxbury, May 15, 1918. Business meeting at 7.30 P.M.

The executive Committee, in keeping with the spirit of the time, feel that it is advisable to omit the annual dinner and usual form of entertainment this year, and have arranged instead a patriotic meeting with the idea of arousing more enthusiasm among the fellows for work in the service.

The program is an exceptional one, and it is earnestly requested that the readers be given a large audience.

The Army,
Major Robert W. Lovett, M.O.R.C., U.S.A.

The Navy,
Medical Director John M. Edgar, U.S.N., Medical Aid to Commandant First Naval District.

F. W. Sleeper, *President*,
Bradford Kent, *Secretary*.

Worcester District Medical Society.—The annual meeting will be held Wednesday, May 8, 1918, in G.A.R. Hall, 55 Pearl Street, Worcester.

PROGRAM.

4.30 P.M. Annual Business Meeting, with election of officers for the ensuing year.
5.15 P.M. Annual Oration. Dr. Royal P. Watkins. Subject: "Old Surgery."
6.15 P.M. Dinner at State Mutual Restaurant. Joint function with Worcester Homeopathic Medical Society.
After Dinner. Music and Patriotic Addresses.

The latter will present our country's pressing need of her doctors in the military organization. Every physician who possibly can should attend this meeting wherein we shall strive to visualize the situation and learn for each the path of duty.

Both societies extend a cordial invitation to all registered physicians of this district to join us in the dinner and what follows.

Physicians desiring to enroll in the bowling tournament for the benefit of the War Chest Fund, should send their names to Dr. O. H. Everett, 53 Pearl Street, Worcester.

Ernest L. Hunt, *Secretary*.

The Boston Medical and Surgical Journal

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Address.

TRAUMATIC SHOCK.*

BY W. T. PORTER, M.D., BOSTON.

THE history of traumatic shock during the past thirty years has been marked by hypotheses that have caused much confusion. These hypotheses give as the cause of shock: (1) the exhaustion of the vasomotor center, (2) the excitation of sensory nerves, (3) a hydrostatic fall in blood pressure, (4) vibration injuries, (5) direct wounds of the vasomotor apparatus, (6) hemorrhage. Some of these ideas are erroneous; others are imperfectly grasped.

The exhaustion of the vasomotor center cannot be the cause of shock because the center does not become exhausted.[1] In shock it still reacts to the stimulation of the depressor nerve. The fall in blood pressure is great enough to prove that the vasomotor center is not significantly impaired. If the blood pressure remains below the nutrient level for many hours, even the resistant vasomotor center suffers, like all other tissues, though the vasomotor center shows a surprising vitality. But the result of prolonged shock is not to be confused with its cause.

Excitation of sensory nerves is not the cause of shock, because the sensory nerves in normal animals may be strongly stimulated for many hours without producing a noteworthy fall in blood pressure.[2]

The confusion of thought that led to the hypothesis of shock from irritation of the nerves rests partly on the mistaken ideas that wounds are acutely painful, and that pain *per se* is followed by shock. Wounds are rarely very painful, and shock is seldom preceded by excessive pain.

It is true that a condition roughly resembling shock has occasionally followed an injury to a nerve during an operation. This condition is not shock, but a prolonged inhibition of the heart.

It is naturally surprising that a stimulus to a nerve, ordinarily innocent, should in such instances call forth strange results. The explanation is that the patient is in a state for which I propose the name *sensitization*. This conception, which is new, rests on experimental evidence. Examples follow: (1) In 50% of dogs given morphine and curare, ligation of the ramus descendens of the left coronary artery produced fatal fibrillation of the heart, whereas fibrillation very rarely occurred when ether alone was used.[3] (2) In a rat to whom morphine and curare were given, gently lifting the sciatic nerve on a thread caused inhibition of the heart, lasting over half an hour.[4] (3) In the tortoise heart, a stimulus which ordinarily caused a tonus contraction lasting 30 seconds, caused in this case a contraction lasting 64 minutes.[5]

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* Remarks by invitation before the Boston Surgical Society, Incorporated, at its twentieth stated meeting held at the Harvard Club of Boston, December 3, 1917.

Since the heart is a modified blood vessel, the sensitization of the heart would lead us to expect sensitization of the arteries. I have at present no experimental evidence of this. Yet there is some clinical evidence of prolonged contraction or relaxation of the blood vessels following stimuli ordinarily uneventful. Such is the tonic arterial contraction in certain migraines, and the long relaxations in urticaria. But the evidence in hand, unquestionable for sensitization of the heart, does not as yet warrant including sensitization of the arteries among the sources of confusion in shock.

A simple hydrostatic fall of blood pressure is not shock. When the intestines are exposed, the largest vascular area in the body dilates and the arterial pressure falls. If this low pressure continues long enough to impair the nutrition of the vascular apparatus, shock may occur. An admirable example of the hydrostatic fall of blood pressure is seen when a spinal injection of novocaine reaches the splanchnic nerve cells. The arterial pressure falls to the shock level, but the fall is usually too transitory to cause shock.[6]

Vibration injuries may cause shock when the vibration, as in certain railway cases, shakes the vasomotor cells until their function is impaired. The blood pressure then falls, and if the vibration has been sufficiently severe, the classical symptoms of shock will soon appear. If the injury affects only the lower half of the spinal cord, the vessels of the lower extremities may be dilated for several days, but this vascular area is too small to lower greatly the general blood pressure, and shock does not take place.

Wounds of the vasomotor paths from shell fragments have been observed in this war. If in the abdomen, the interruption to the tonic constrictor impulses is serious. Hydrostatic shock may follow.

That hemorrhage is not usually a cause of shock is proved by the simplest reflection. In the present war, shock occurs once in every hundred casualties. Sometimes the shock case bleeds freely, sometimes not. But practically always, in the other 99 cases, who do not have shock, there will be men who have lost more blood than the shock case.

The idea that hemorrhage is a frequent cause of shock rests on the unquestioned fact that on the operating table the loss of a small quantity of blood is sometimes followed by shock. The explanation is that the blood pressure was near the *critical level* and that the loss of a small quantity of blood carried the pressure below the critical level. Ordinarily, the loss of from 500 to 1000 cc. of blood may leave the pressure still on the safe side of this level.

The critical level of blood pressure is that point below which the blood pressure will not usually rise again without assistance. With the Vaquez instruments used by me in France, the normal diastolic pressure was 97 and the critical level about 60, *i.e.,* between two-thirds and three-fifths of the normal. Certainly the normal diastolic pressure varies with the instrument employed. It is possible that the critical level shows a similar variation.

An understanding of the critical level is of the first importance in the study and treatment of shock. If the blood pressure just touches the critical level, a difference of ten millimeters of mercury may be the difference between life and death. A few millimeters above this level, recovery will usually occur spontaneously; a few millimeters below, death will follow unless skilled aid be at hand. It follows from this vital fact: (1) that procedures which at ordinary blood pressures are not harmful, or are but slightly harmful, may kill the patient at the critical level; (2) remedies that raise the blood pressure but ten or fifteen millimeters will save the patient when this rise carries the blood pressure from just below to just above the critical level.

The critical level varies with the condition of the nerve cells and other tissues. A blood pressure high enough to maintain a sufficient nutrition in normal bulbar nerve cells is too low to maintain life in cells that have already suffered from malnutrition. In that case a blood pressure raised by the surgeon to a point above the usual critical level will shortly sink again. Hence the importance of frequent readings of the blood pressure until shock patients are clearly out of all danger. Treatment not based on repeated readings of the blood pressure is not intelligent, and may be harmful.

The diastolic blood pressure should be employed in shock. In this condition, the heart beats feebly. The systolic pressure falls more than the diastolic pressure falls. Conversely, when remedies are used, they often raise the systolic pressure more than they raise the diastolic pressure. Conclusions drawn from the systolic pressure may easily err 15 millimeters or more. But in shock, the blood pressure is at a critical level; a change of even 15 millimeters may be a matter of life or death. The error in using the systolic instead of the diastolic pressure may, therefore, do much harm.

In the summer of 1916, during my service in the fighting line in France, I learned that in this war, shock occurs chiefly after shell fractures of the femur and after multiple wounds through the subcutaneous fat. In 1000 casualties, observed by me at the Massif de Moronvillers, these were the only injuries producing shock, except certain abdominal wounds in which the shell fragments undoubtedly disturbed the apparatus of the largest vascular area in the body.

It has long been known that fat embolism takes place after fractures of the thigh and after multiple wounds through the subcutaneous fat.

In February, 1917, I proved that the injection of a small quantity of neutral olive oil in the jugular vein was followed by a falling blood pressure and the other symptoms of traumatic shock. The resulting publication was the first clear statement that shock as seen on the battlefield is frequently caused by fat embolism.[7]

Shortly thereafter I developed a new remedy for the treatment of shock. It has long been known that the pumping action of the diaphragm is an important aid in the movement of blood from the abdomen into the chest. At the height of a strong inspiration the venous pressure in the chest may be more than 40 millimeters lower than the venous pressure in the abdomen. I produced strong respiratory movements of the diaphragm by allowing the animal to breathe an atmosphere rich in carbon dioxide. The diastolic arterial pressure was thereby increased 15 and even 30 millimeters.[8]

In June, 1917, at the Chemin des Dames, I successfully applied this new method to the treatment of wounded soldiers. In cases almost pulseless—cases in which all other means of raising the blood pressure had failed—the carbon dioxide respiration strengthened the pulse and raised the diastolic blood pressure 10 millimeters.[9] This rise is of great value when the pressure is at the critical level.

The general treatment employed by me at the Chemin des Dames was as follows: A shock room was made next the operating room. The patient was carried to the shock room directly from the ambulance. He was not washed. He was at once placed on an operating table, inclined so that the feet were 30 cm. higher than the head. An electric heater was put between the blankets and the body. The diastolic pressure was taken every 15 minutes. Where indicated, injections of warm normal saline solution were made into a vein. If his state was grave, adrenalin was added to the saline solution. Carbon dioxide respiration was used. When his condition justified operation, the clothing was cut away about the wound and the area disinfected. Neighboring regions were covered with sterile cloths. He was then moved, still in the inclined position and still on his hot table, to the operating room. The operation was done under local anesthesia, whenever possible. At its close, the patient was wheeled back to the shock room, still on the same inclined hot table. I did not leave him until he was out of danger or dead. Repeated readings of the pressure were taken. The remedies were directed to raising the diastolic pressure to a point about 15 millimeters above the critical level—more is not necessary. One case was operated on during the carbon dioxide breathing, with apparent advantage.

Under these methods four-fifths of the patients recovered.

A word as to details may be of interest. Normal saline solution should be injected at 39° C., measured by a thermometer in the vertical limb of a ⊥ tube placed next the cannula. If the pressure has not remained too long below the critical level, it will be raised by the normal saline; otherwise not, because the permeability of the vessel walls is increased by prolonged low pressures. Prof. Bayliss states that the addition of 5% of gum arabic to the saline solution will prevent leakage and thus raise the pressure under all circumstances. This suggestion was made after my leaving France, and I have had no personal experience of its value.

Adrenalin is of temporary advantage, but even this fleeting rise of blood pressure may save life. In the laboratory, the blood pressure of animals may be raised for considerable periods by allowing the well-diluted adrenalin to flow into the vein drop by drop from a burette. I have not tried this on men.

Dr. Meltzer very recently stated that the pressor action of epinephrin is much prolonged when the drug is injected into the vertebral canal.

The carbon dioxide respiration should not be stopped too abruptly.

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[7] Porter, W. T.: BOSTON MEDICAL AND SURGICAL JOURNAL, 1917, clxxvi, p. 248.
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BETH ISRAEL HOSPITAL.—The Beth Israel Hospital has undergone a change of management. The executive committee, including Dr. K. M. Davidson, Dr. Albert Ehrenfried, Dr. Harry Linenthal, and Dr. Louis M. Friedman, are now reorganizing the medical board. Committees have been appointed to procure the services of a competent physician as superintendent and to conduct a campaign for new membership. This hospital is now being conducted on the Kosher basis.

Original Articles.

THE ANATOMY AND PHYSIOLOGY OF THE RESPIRATORY TRACT.*

BY FRANK F. D. RECKORD, M.D., HARRISBURG, PA.,

Deputy Medical Inspector of Tuberculosis Dispensaries, Pennsylvania State Department of Health.

THE ANATOMY OF THE RESPIRATORY TRACT.

THE respiratory tract develops as an outgrowth of the primary digestive tube, and consists of air passages—nasal fossae, pharynx, larynx, trachea and bronchial tubes—and organs of special function—the lungs, which correspond in structure and development to racemose glands.

The larynx consists of a number of cartilages which by their relative changes of position modify the approximation and tension of two folds of mucous membrane over fibrous tissue, known as the vocal cords, on either side of the cleft through which the air enters the windpipe. The larynx is in the neck, being suspended from the hyoid bone and leading to the trachea. It is practically subcutaneous in front. Its superior orifice is behind the base of the tongue, and can be seen in life only by a mirror. The cartilages are connected by joints and ligaments, moved by muscles, and covered by mucous membrane, the folds of which form important morphological parts of the larynx.

The trachea (10 to 12 cm. long and 11 to 18 mm. wide) is kept patent by horizontal cartilaginous rings embedded in its wall, but which are deficient posteriorly, where it is consequently flattened. It begins as the lower border of the cricoid cartilage opposite the lower margin of the 6th cervical vertebra and extends beneath the thyroid, through the suprasternal region and jugular fossa of the superior mediastinum, ending at the junction of the manubrium and gladiolus and the level of the upper border of the 5th dorsal vertebra. It follows the median line to its lower end, which is slightly to the right, lying upon the esophagus and following with it the curve of the vertebral column, passing behind the thyroid plexus, manubrium, left innominate vein, innominate artery and part of the left common carotid. There is a slight expansion about its middle and at the bifurcation, which is held in fixed position, the remainder having considerable mobility.

The mucosa is lined by stratified ciliated columnar epithelium containing goblet cells. The tunica propria consists of a loose inner fibrous layer and an outer network of longitudinal elastic fibers. The submucosa, containing small groups of mucous glands, loosely connects the mucosa with the fibrous sheath, which forms a complete investment.

The bronchi are formed by the bifurcation of the trachea, which they leave at right angles to each other. The right is shorter and broader than the left, and takes a more vertical course and its first collateral branch arises much nearer to the trachea. Each passes outward and downward to the hilus of the lung, where it subdivides into its ramifications, which extend down into the lowest lateral part of the lungs.

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* From a Post-Graduate Course of Instruction for the Medical Staff of the Pennsylvania State Tuberculosis Dispensaries.

The structure repeats almost exactly that of the trachea, with such modifications as result from the slighter general development of the coats incident to the gradual reduction in the size of the tubes.

The lungs are a pair of conical organs, each developed in a serous membrane—the pleura—occupying the greater part of the cavity of the thorax, and separated from each other by the contents of the mediastinum. Although in general conical, the lung differs in many respects from a true cone. The base is concave, moulded over the convexity of the diaphragm, and descending further at the back and side than at the front and internally. The apex is not over the middle of the base, but much to the inner and posterior side of it, so that the back and inner side of the lung descend much more directly than the rest.

The right lung is the larger on account of the greater encroachment of the heart on the left. Its apex rises from one inch to one and three quarters inches above the level of the clavicle. It differs from the apex of the left lung in that it lies close to the trachea, while the apex of the left lung is separated from the trachea by the great blood vessels springing from the arch of the aorta. The anterior border runs downward, forward and inward—passing nearly behind the right costo-sternal articulation to the mid-sternal line at the level of the second rib. From this point it runs vertically downward to the level of the sixth chondro-sternal articulation, where it turns sharply to the right and becomes the lower border. The lower border bears relation to the sixth rib in front; side, eighth rib; back, tenth rib. The lobes are three in number, produced by deep fissures. The upper and lower lobes are separated by a fissure starting at the spinal column, level with the spine of the scapula. This runs outward, downward and forward to the fourth rib in the axillary line, where it divides into two secondary fissures. The upper runs forward horizontally, reaches the anterior border of lung at the fourth rib. The lower fissure passes downward and forward to the lower border of the lung in the mammillary line. These fissures bound the middle lobe.

In the left lung the apex is separated from the trachea by the great blood vessels, esophagus, areolar, and lymphoid tissue. The anterior border lies farther from mid-sternal line; at level of fourth rib it curves outward, downward, and then moderately inward to the sixth rib, exposing a semi-circular area of the pericardium (superficial or exposed cardiac dullness). The lower border runs outward and around to the spinal column similar to that of the right. The lobes are two in number,—the upper and lower, separated by a fissure which, instead of bifurcating as in the right side, passes downward and forward, to end at the sixth rib in the left mammillary line.

Both upper lobes extend as far as the spine of the scapula posteriorly; below this are the lower lobes. Anteriorly the lobes bear the following relations: right side, upper lobe as far down as fourth rib; middle lobe from fourth to sixth ribs; on left side, upper lobe alone. Laterally, right side, in the mid-axillary line is the upper lobe and the beginning of the middle and lower lobes. Laterally, left side, in the mid-axillary line, upper and lower lobes.

It is the superior or upper lobe on both sides that contains the apex and the lower or inferior lobe which has the base or the broad concave surface.

The volume of the upper and lower lobes of the left lung is about equal. In the right lung, that of the inferior is about equal to that of the other two. We consider the middle lobe simply as a piece cut off from the upper, so that the right upper and middle lobes correspond to the left upper lobe.

The roots of the lungs consist of the bronchi, the right one giving off a branch before entering the lung; the pulmonary artery and vein; the bronchial arteries and veins, the lymphatic vessels and nodes and the nerves.

Louis' angle (the junction of the manubrium with the gladiolus) marks the sternal attachment of the second rib. It is opposite to the level of the fifth thoracic vertebra, indicates the level at which the trachea bifurcates, and anteriorly the upper point at which the lungs meet, to diverge again at the fourth costal cartilage. It marks the upper boundary of the cardiac auricles, and the point at which the veins of the hand collapse while the arm is being raised upward from its lowest to its highest position (Gaertner's test of venous blood pressure). It forms a convenient landmark from which to count ribs.

The percussion note from the right upper apex to the second interspace is slightly higher pitched, less resonant, and at times has a slightly tympanitic quality because: (1) The right apex is smaller. (2) The superior vena cava lies in front of the inner part of it. (3) The right subclavian artery occupies a more anterior, the left a more mesial, position. These conditions account for the diminished resonance and higher pitch. The right apex lies in immediate contact with the trachea. This accounts for the tympanitic element (and in part for the elevation of pitch. (4) A slight influence—with light percussion—is sometimes exercised by the increasing thickness of the right pectoral muscles.

Pleurae. The pleurae are a pair of serous membranes disposed one over each lung and then reflected so as to line the walls of the cavity containing it, thus forming a distinct closed sac about each lung; hence the pleura is divided into a visceral and a parietal layer. The latter is subdivided according to its situation into a mediastinal, a costal, a cervical and a diaphragmatic part.

The visceral layer closely invests the lungs, following the surface into the depths of the fissures. It leaves the lung at the borders of the hilum and invests the root for a short distance, when it leaves the latter and spreads out as the mediasinal pleura, which is applied, back to back, to the pericardium, thus forming on each side a vertical antero-posterior septum between the lungs and the contents of the mediastina.

The pleural sacs extend below the lower border of the lungs to a considerable extent in the mammillary line. They lie 2 inches below in midaxillary line, 3½ inches in the scapular line, 1½ inches lower than the edges of the lungs.

Lobules of the Lung. W. S. Miller found that the last branch of the bronchus before breaking up in the parenchyma of the lung becomes somewhat dilated at its distal extremity. Connected with this expansion of the terminal bronchus there are from three to six nearly spherical cavities—the atria. Each atrium communicates, on the one hand, by means of a nearly circular opening with the terminal bronchus; on the other hand, by semilunar shaped openings, with a variable number of larger and more irregular-shaped cavities (air sacs) which have small projections from their surface (alveoli, air cells). From this description it will be seen that the air sacs do not communicate directly with the terminal bronchus, as is usually described, but between each air sac and terminal bronchus there is interposed a cavity, which is constant in all parts of the lung, viz., the atrium.

Thus the atrium is smaller than the air sacs and, like the terminal bronchus, the air sac has numerous air cells projecting from its surface. In structure the walls of the atrium resemble that of the air sacs.

The above portion of lung structure, Miller considers the lung unit, to which he has assigned the term, "primary lobule"; while to an aggregation of primary lobules which is marked out by well-defined connective tissue septa, together with the blood vessels, lymph vessels and nerves associated with the above-defined aggregation, he gives the name of "secondary lobule."

Piersol agrees with Miller that the portion which he has called the primary lobule is the lung unit, but prefers the term "lobule" to be associated with this aggregation of units which Miller calls the secondary lobule.

The Blood Vessels and Lymphatics of the Lungs. The pulmonary artery serves not for the nutrition of the lung, but for the aeration of the blood. An intralobular branch enters each lobule near the apex with the bronchus and follows its ramifications until the ultimate bronchi have ended in the air-chambers of the lung unit.

The pulmonary veins return the aerated blood to the left auricle. They arise from the capillaries in the walls of the air-chambers, running first on the outside of the lung units, uniting with others, and ramifying the connective tissue about the lobules. Thus the circulation is from the center toward the periphery.

The bronchial arteries carry the blood for the nutrition of the lungs, especially that of the air tubes, the lymph nodes, the walls of the blood vessels, and the areolar tissue about them.

The lymphatics of the lungs may be divided into a superficial and deep set. Lymphoid tissue is situated in the peripheral portion of the lung and also in the pleura. Passing toward the hilum we have the pulmonary lymph nodes, and at the hilum the various bronchial groups

The flow of the lymph, according to Miller, in the lymphatics of the bronchi, arteries, the main venous trunks, and the greater part of the pleura, is toward the hilum of the lung. In the lymphatics about the veins, the flow, especially in those beneath the pleura, and communicating with the pleural network of lymphatics, may be toward the pleura.

PHYSIOLOGY OF THE RESPIRATORY TRACT.

Respiration is used to express respiratory movement and, secondly, the interchange of oxygen and carbon dioxid. By means of the respiratory movements we have an inflow and outflow of air to and from the lungs. The object is to supply the body with the necessary oxygen for its oxidation processes and to remove the carbon dioxid resulting from combustion. External respiration consists in the interchange between gases of the outer air and those of the blood contained in the lungs and skin, while the internal, or tissue respiration, is the exchange of gases between the capillary blood and the body tissues.

The organs of external respiration consist of the lungs and upper air passages; pleurae; muscles of inspiration and expiration; nerves, consisting of the vagus, sympathetic, intercostals, phrenic and others; the respiratory center which is located in the medulla and subsidiary centers in the cord; pulmonary blood vessels.

Any condition which will, in any way, alter the normal action of any of the above structures will produce a change in the external respiration and indirectly affect the internal interchange. Still more indirectly will it affect the metabolism of the body and the various functions performed. Thus it matters not whether the disturbance is with the heart, which fails to maintain the circulation through the lungs, with the air passages not permitting sufficient amount of air to enter the air sacs, or a paralysis of a phrenic nerve, inhibiting the action of the diaphragm; the gaseous exchange is interfered with in each instance, the effect depending upon the nature and severity of the lesions.

Therefore the normal respiration depends upon the condition of the lungs and the upper air passages; the respiratory movements; the action of the heart; the condition of the blood and blood vessels; and the character of the air breathed.

The functions of the upper air passages are: (1) to transmit air to and from the lungs; (2) to warm the air; (3) to filter the inspired air; (4) to furnish a place for the peripheral endings of the nerves of smell; (5) to protect the lungs from foreign particles by reflex action on account of the stimulation of the different endings in the mucous membrane. The mucus secreted by the glands in the mucous membrane of the respiratory tract arrests dust particles and other foreign bodies in the inspired air, and the ciliated epithelial cells keep the lungs clear of accumulations of mucus and the suspended dirt particles. The squamous cells lining the air vesicles, by virtue of their vital activity, play a part in the exchange of the respiratory gases.

The mechanism of respiration consists in the alternating dilatation and contraction of the thoracic cage; the dilatation is termed "inspiration" and the contraction is called "expiration." The lungs lie wholly passive within the thoracic cavity, and by virtue of their complete elasticity follow every change in the capacity and shape of the thorax. Enlargement of the thorax is affected by certain muscles known as the muscles of inspiration; the diaphragm descends and at the same time is withdrawn from the chest walls; the ribs are elevated and rotated outward. At the end of inspiration the muscles relax and the thorax collapses, expiration being usually a passive process due to the elasticity of the lungs, the weight of the chest, the tension of the abdominal muscles, and the torsion of the costal cartilages. It is also assisted to some extent by the action of the muscles of expiration. The respiratory movements are controlled by a center in the medulla.

The lungs are in the nature of two large bags which are honeycombed with saccular pouches or alveoli. Owing to this, the total surface exposed by these air vesicles is equal to 200 square meters. This surface is from 100 to 130 times greater than the surface of the body. These air vesicles are covered by a dense capillary plexus, and so dense is this that the air vesicles are literally covered by a film of blood. The lungs are highly elastic, always under normal conditions they are somewhat stretched or inflated. At birth the lungs do not contain any air; but, after respiration has once started, there is never any absence of air.

The importance of knowing the amount of air space within the air sacs and air passages is quite evident in many conditions where the amount of air taken in and given off seems to be much diminished. In these conditions the spirometer is of value and will best show the tidal air, by which is meant the volume respired during each quiet respiratory movement, amounting to 300 cc., or 18 cubic inches.

The complemental air is the volume of air inspired after completion of ordinary inspiration, and amounts to 1700 cc., or 104 cubic inches. After you have performed a quiet expiratory act you can force from the lungs a large volume of air, called "reserve" or "supplemental" air, which is equivalent to 1500 cc., or 91 cubic inches. After you have thus forcibly driven all air from the lungs that is possible, a considerable amount remains in the lungs. Thus the volume of air remaining in the lungs after a forced expiration is called "residual air," and is equal to 1000 cc., or 61 cubic inches. Therefore, the vital capacity of the lungs is the volume of air which can be expired after forced inspiration. It includes the tidal, complemental, reserve, and residual airs, and amounts to 4000 to 4500 cc. It varies with age, stature, posture, occupation, clothing and state of the stomach.

Atmospheric pressure is exerted upon the veins in the neck and externally upon the vena cava in the abdomen, while in both cases the pressure in the thorax upon the extensions of these vessels is less. At each inspiration, therefore, the blood is rapidly forced from these veins into the heart. The atmospheric pressure equals 760 mm. of mercury, or about 15 pounds to the square inch.

The intrathoracic pressure is the pressure in the thoracic cavity outside of the lungs. It is the pressure exerted upon the heart and the great vessels in the chest.

The intrapulmonic pressure is the pressure in the interior of the lungs. During inspiration, intrapulmonic pressure falls below the atmospheric pressure. If the air passages are obstructed, as in asthma, edema of the glottis or a cold in the head, there is a fall of pressure in the lung during inspiration. When the glottis is closed inspiration and expiration give greater rise and fall. Emphysema results from the increased intrathoracic pressure, the least supported, or weak parts, giving way first.

The normal respiratory rate per minute in the newborn is 44; from 1 to 5 years, 26; 15 to 20 years, 20; 20 to 25 years, 18.7; 25 to 30 years, 16; 30 years, 15.1.

In disease the respiration rate may be increased or diminished.

a. Rapid respiration—may exist without the presence of difficult or laborious breathing. It may be due to muscular exertion, mental excitement, fever, by the influence of heated blood upon the medulla, lobar pneumonia, hysteria.

b. Slow respiration—found in many of the varieties of coma, collapse, and by poisoning with aconite, antimony, chloral, chloroform and opium.

The term "eupnea" is applied to easy breathing. In this the chief point of distinction is that expiration is entirely passive. Quiet breathing is mainly diaphragmatic or abdominal. We speak of the types of breathing as either "costal" or "abdominal," implying that these respective parts are seen to act more strongly.

The thoracic type predominating is found normally in women at or after the age of puberty. Costal breathing in a man or its presence to excess in a woman is indicative either of dyspnea, real or subjective, or of some condition limiting the mobility of the diaphragm, abdominal respiration depending upon the full and free action of the latter.

Excessive upper costal or diminished abdominal breathing may be caused by pressure upon the diaphragm, ascites, meteorism, or abdominal tumors or enlargements; large pericardial effusion, inflammation of the diaphragmatic pleura or peritoneum, paralysis of the diaphragm, emphysema. Finally, the marked costal breathing of the hysterical patient is familiar.

The abdominal type predominating is found in children of both sexes and the adult male. If this type is exaggerated in a man, or is present together with diminished or absent thoracic breathing in a woman, it is abnormal.

Causes. Found in conditions which render movements of the thorax painful, such as pleurisy, pleurodynia, fracture of rib, double pleural effusion, calcification of the costal cartilages, emphysema, the rare scleroderma of the chest wall and ossifying myositis; may also be due to paralysis of the muscles of inspiration, as in injury or disease of the cervical portion of the spinal cord or bulbar paralysis, or spasm of the same muscles in strychnine poisoning or tetanus.

Respiratory movements of the thorax should be investigated by inspection, palpation and mensuration. Inspect chest in a good light from the front, side, back and from above—watching carefully for defective or excessive motion, general or local.

The natural type shows the movement fairly well balanced—abdominal in excess. The extreme costal type is somewhat different from the others in that there is a marked outward movement of the costal portion of the thorax and movement inward of the abdominal walls. In this type we find the most effective force to get blood back to the heart.

NERVOUS MECHANISM OF THE RESPIRATORY MOVEMENTS.

The nervous mechanism required to initiate and regulate the coördinated action of the numerous muscles which execute the respiratory movements consist of a respiratory center, with afferent and efferent nerves. The respiratory center lies in the medulla, and is divided into unilateral halves, so closely connected as to perform functionally as a single center. The right half is connected with the respiratory musculature of the same side and *vice versa*. Each half is sensorially connected with both sides of the body.

No sensory impulses are generated in the lungs under normal conditions except those generated in inflation which inhibits the discharge of impulses from the center.

The power of rhythmic action is inherent in the nerve cells of the center, but it requires a continuous excitation, which is supplied by the carbon dioxid and other substances in the circulating blood.

Deficient Expansion. This may be general, affecting the thorax as a whole, or localized on one side or a portion of the chest. A general poor expansion may be due to the limiting effect of the chest pain incident to pleurisy, pneumonia, pleurodynia, fractured ribs, angina pectoris and intercostal neuralgia, obstructed upper air passages, as in pressure on the trachea (mediastinal tumors or aneurysm), laryngeal stenosis, tumor, paralysis or spasm, paralysis or tetanic spasm of the respiratory muscles, asthma and emphysema, the lungs being distended to an extent which will permit but slight additional expansion. Shallow breathing may be simply a part of the general muscular weakness of adynamic conditions, *e.g.*, collapse, syncope, or the typhoid state in general.

Unilateral deficiency of expansion is indicative of some diseased condition which prevents inflation of the corresponding lung. It is a diagnostic symptom of importance, and may find its explanation in a mechanical hindrance to expansion upon one side by the presence of fluid or air in the pleura or extensive pleural adhesions, or on the right side by an enlarged liver; in obstruction in the main bronchus by foreign body or the pressure of an aneurysm or tumor, or in disease confined to one lung—tuberculous, fibroid, pneumonic, cancerous, hydatid or atelectatic.

A local deficiency in expansion or a lagging of one portion of the chest wall behind the remainder during inspiration is suggestive of circumscribed disease of the lung or pleura. Deficient expansion under the clavicle is seen in tuberculosis; of the upper or lower portion of the thorax, in apical or basal pneumonia; of the pericardial space in pericardial adhesions, of various localities with pleural adhesions, and especially in the child in local atelectasis, or collapse of the lung.

Increased general expansion occurs after exercise or mental excitement and in hysteria and some forms of dyspnea. Local or unilateral increase of expansion may be compensatory.

Retraction of the interspaces is usually associated with deficient expansion and inspiratory dyspnea. General retraction is most marked in obstruction of the upper air passages and extensive bilateral broncho-pneumonia in children. Unilateral or local recession indicates obstruction of the bronchus or circumscribed interference with expansion as in pulmonary collapse of infants, the affected portion not distending, pleuritic adhesions and other similar conditions. *Bulging during inspiration* is seen only above the clavicles, and is an evidence of emphysema, the apex of the hypertrophied lung protruding above its normal level.

LITTEN'S PHENOMENON.

The existence of the moving shadow of the diaphragm in the axilla, with patient supine, feet to the light, is due to the fact that, at the end of expiration, the lower portion of the highly arched diaphragm is in contact with the chest wall as far up as the sixth rib. During inspiration the diaphragm flattens, recedes from the chest wall and permits the lower borders of the expanding lungs to interpose between it and the chest wall; the lungs thus enter the complemental pleura and fill out the corresponding intercostal spaces. The extent of movement of the shadow is, therefore, a measure of the excursion of the diaphragm. In this respect Litten's method is also a fairly good substitute for the fluoroscope. A normal excursion and a proper respiratory action of the thorax constitutes good evidence of a satisfactory pulmonary capacity. A diminished excursion is present in the early stage of pulmonary tuberculosis, or may occur in conditions of great prostration from any cause. Absent excursion is seen in pleural effusions, pneumonia of the lower lobes and in emphysema, as the diaphragm in such cases is held away from contact with the chest wall. It may be due to pleuritic adhesions between the chest wall and the diaphragm, whereby the descent of the latter is prevented. A contracted (fibroid) or adherent lung may be unable to descend into the complementary space. A very large ascites also may abolish the phenomenon, although abdominal tumors, either solid or fluid, provided they are not of great size, do not hinder the movement of the diaphragm and the production of the shadow. This fact may afford a valuable differential sign in deciding between a right pleural effusion or enlargement of the liver, on the one hand, and a subphrenic abscess on the other. The finding of the Litten's phenomenon speaks for the subphrenic abscess.

By the term "apnea" we mean no breathing. Often in medical literature it is used wrongly to express suffocation. It is due to stimulation of the respiratory centers, and is brought about by rapid and prolonged ventilation of the lungs caused by removal of carbon dioxid from the blood; rhythmical inhibition of the respiratory centers through the vagus endings in the lungs.

When disturbances of external respiration become considerably greater than can be met by compensatory mechanism, asphyxia is produced. The symptoms such as we see, namely, suffocation, convulsions, calm—due to exhaustion of the respiratory centers, long-drawn inspiration, quietness and death are due to lack of oxygen and, secondly, to an increase in the carbonic acid gas.

Muscular work increases the rate and amplitude of respiratory movements, probably due to certain substances produced in the muscles, which are thrown into the blood.

All living things are killed when the oxygen pressure is high—from 300 to 400%. Warm-blooded animals die with convulsions when three atmospheres of pure oxygen or fifteen atmospheres of air is reached. A pressure of two atmospheres of air (40%) shows no injurious effect.

No bad results are seen from a diminished amount of oxygen until 10% is reached. At or below this amount the hemoglobin of the blood cannot take up oxygen. At 10% respiration becomes deeper, more frequent, and the lips become blue. At 8% the face assumes a leaden color but distress is not marked. At 5% marked panting, clouded senses, loss of power is observed, and at 1% to 2% there is loss of consciousness in 40 or 50 seconds. If maintained for some time, death with convulsions occurs when the pressure is diminished to 6%. The effects of an increased amount of carbon dioxid are that hypernia, which is excessive or abnormal mental activity, occurs at a concentration of 3%. A distinct dyspnea is seen at a concentration of 8%, 10%, 15%.

Cheyne-Stokes respiration is seen in arteriosclerosis, uremic states, cerebral edema, fatty degeneration of the heart, kidney diseases, and other conditions. It is always a grave sign in the adult. There is a gradual increase, climax, and a gradual fall in the curve of the respiratory movements, followed by a pause. The ascending and descending phases are about the same in length of time. The average is three cycles per minute. The real cause is not known, although it is seen to occur generally when the nerve centers of respiration are fatigued, or the vitality is lowered. The action tends to be periodic.

Biot's respiration is sometimes called meningeal respiration. This is a very decided pause from several seconds to half a minute, and is more, or less, periodic. This is also a grave prognostic sign.

Dyspnea is an altered form of breathing produced by various conditions which serve to promote the object of breathing. It is increased for the demands upon the oxidation processes and when the respiratory processes are obstructed. Both the deficiency of oxygen and the excess of carbon dioxid are of importance in the cause of this condition. In cyanosis, the difference in color between the arterial and venous blood is due to a changed percentage of oxygen, and the blue color of the peripheral veins is attributed to interference with the light rays in the skin. The primary cause of cyanosis seen in divers returning to the surface is the consumption of the circulating oxygen. The condition of collapse in peritonitis, and partly so in cholera, is due to the reduction of pressure in the aortic system whereby the organs do not receive a sufficient supply of blood and become impoverished in oxygen. In disturbances of the respiratory apparatus with dyspnea, pronounced cyanosis occurs only when the respiration is not strong enough to arterialize the blood through increased pulmonary action.

Cases of prolonged dyspnea without cyanosis are seen in those affections in which the disturbance of respiration is due to direct or reflex excitation of the central nervous organs of the respiratory system. It is frequently observed in dyspnea with high temperature, in the heavy breathing which precedes coma diabeticum, and in bronchiall asthma. Dypsnea may be caused by: (1) pain, (2) diminished breathing surface, (3) general circulatory disturbances, (4) disturbances of the upper air passages, (5) bronchitis, (6) bronchial asthma, (7) emphysema, (8) uremia of nephritis, (9) fever, (10) anemia.

Asthma is an expiratory dyspnea. It is probable that the dyspnea is due to a spasmodic contraction of the unstriped muscular fibers in the bronchioles. At times there may be a true inflammation of the mucous membrane of much of the respiratory passage. The hindrance to the entrance and exit of air is due to: (1) swelling of the mucous membrane, (2) abnormal secretion of mucus, (3) spasm of the diaphragm induced by stimulation of the vagus, (4) spasm of the muscles of the small bronchi (Krehl). The attacks may be produced reflexly. Stimulation most frequently is made upon the sensitive parts of the respiratory tract, as the turbinates of the nose and the surface of the finer bronchi.

Emphysema is a dyspnea due to diminished expiratory power and decreased aerating surface, consequent to vesicular atrophy and loss of capillaries in the walls. The prolonged expiration is due to diminished elasticity of the lung tissue.

Actual pain may be caused by diseases of the respiratory apparatus. Most authors believe that the lungs themselves contain no fibers that are capable of transmitting sensations of pain, and that all pulmonary pains arise from the pleura or the chest wall. Severe pains are frequently present in dry pleurisies, and since the latter often accompany diseases of the lungs, it is possible that they are responsible for the pain present in many of these cases. Pain, however, may be present in diseases of the lung which are not accompanied by pleurisy.

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A PORTABLE RESPIRATION APPARATUS FOR CLINICAL USE.*

By Francis G. Benedict, Boston.

The value of studies of the gaseous metabolism in clinical and surgical treatment is being increasingly recognized. Metabolism studies are frequently made for such use, but unfortunately the technic is somewhat complicated, particularly as many of the methods employed require gas analysis. Although the cumbersome gas-analysis apparatus of Zuntz-Geppert has been superseded by the more portable form of Haldane, gas analysis in all its intricacies still remains the bugbear of workers in gaseous metabolism. Furthermore, the gas analyst, to retain his skill, must analyze practically every day.

In all forms of respiration apparatus, the technical errors inevitably fall primarily on the determination of the oxygen consumption. Any method of determining the gaseous metabolism in short periods, which does not give accurate measurements of oxygen consumption, can have but limited value for the study of pathological cases; for of the two respiratory gases, carbon dioxide and oxygen, the latter is the better index of the total metabolism and the energy transformations.

It was formerly believed that direct heat measurements were absolutely necessary for accurate estimates of the energy transformations in the body, but Gephart and Du Bois[1] have admirably shown that even during short periods of one hour the heat calculated from the measurement of the gaseous metabolism (indirect calorimetry) compares very closely with that directly measured in a respiration calorimeter similar to those used in the Nutrition Laboratory. Thus today we may confidently assert that an accurate measurement of the oxygen consumption is a very close index of total heat production. The calorific value of 1 liter of oxygen, *i.e.*, the heat produced when 1 liter of oxygen is absorbed in the body, remains relatively constant irrespective of whether oxygen is used to burn fat (calorific value per liter of oxygen, 4.686 calories) or to burn carbohydrate (calorific value per liter of oxygen, 5.047 calories). On the other hand, the calorific value of carbon dioxide, that is, the heat accompanying the excretion of 1 gram of carbon dioxide, varies considerably, depending upon whether the carbon dioxide is derived from the combustion of fat (calorific value per liter of carbon dioxide, 6.694 calories) or from the combustion of carbohydrate (calorific value per liter of carbon dioxide, 5.047 calories). Unfortunately, as has already been shown, the oxygen consumption is usually the more difficult factor to determine.

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* From the Nutrition Laboratory of the Carnegie Institution of Washington, Boston, Mass.

The best type of apparatus to use for measuring the gaseous metabolism of hospital patients has been a matter of special consideration. In measuring the metabolism with any type of respiration apparatus, we have always to consider the fundamental physiological error due to a possible disturbance of normal respiration. As already pointed out,[3] all forms of respiration apparatus in which a mouthpiece or nosepieces are employed (and this does not include the use of a mask permitting free breathing) are subject to criticism on account of the altered type of respiration. This physiological alteration of respiration affects primarily the carbon-dioxide excretion. For instance, a temporary over-ventilation of the lungs produces an excessive sweeping out of carbon dioxide. This results in an abnormally high value for the carbon-dioxide excretion, which of course materially disturbs the respiratory quotient. Such alterations of the respiration are especially liable to occur with hospital patients, who are frequently inclined to be apprehensive and annoyed by the attachment of breathing appliances. It was for this reason that the clinical respiration chamber,[3] which insures normal untrammelled breathing, was devised. A replica of the apparatus has been successfully used at the New England Deaconess Hospital and elsewhere for the determination of the respiratory quotient of patients; we believe it to be the best method for this specific purpose. The technical skill of Dr. Thorne M. Carpenter of the Nutrition Laboratory has enabled him to use a mask applied to a patient's face, the mask being supplemented by expiratory and inspiratory valves; the expired air is collected in a spirometer and analyzed with the Haldane apparatus. This procedure has been successfully copied in many hospital laboratories. With an expert gas analyst and the daily use of a good gas-analysis apparatus, the method gives very satisfactory results, inasmuch as the application of the mask to the face is undoubtedly a much less disturbing factor in respiration than the insertion of either a mouthpiece or nosepieces.

All of the forms of respiration apparatus heretofore used for pathological study require considerable time for the completion of their several experimental processes. Usually to secure duplicate results it is necessary for the patient to remain in the laboratory at least an hour or an hour and a half, and with most types of apparatus the experiment must be followed by an hour or more of trying gas analysis. Neither the universal respiration apparatus[4] nor the clinical respiration chamber[5] require gas analysis, but with both apparatus a special meter is used for the measurement of the oxygen consumption, with corrections for barometric and temperature changes and frequent calibration. While the clinical respiration chamber especially leaves little to be desired so far as accuracy and simplicity of operation are concerned, the two apparatus are yet sufficiently complicated to demand considerable regular attention to keep them in working condition. Furthermore, they both need not a little space for operation and are not portable, inasmuch as they cannot be readily transported from ward to ward or from the bedside of one patient to that of another in the hospital. *The need of a portable apparatus designed to give, without gas analysis and without meters or weighings, a rapid and accurate measurement of the oxygen consumption, is very great.*

The oxygen consumption is not only the more important of the two respiratory gases, at least so far as its significance in quantitative measurements of the total metabolism is concerned, but it has the further advantage over the carbon-dioxide production of not being affected by abnormal respiration unless the over-ventilation of the lungs is so extraordinarily large as to necessitate excessive muscular exertion. Consequently a type of apparatus which is to be used primarily for measurements of the oxygen consumption and only secondarily for measurements of the carbon-dioxide production, may, with propriety, employ a mouthpiece. It is with this fact in mind that the portable respiration apparatus here to be described has recently been devised.

DESCRIPTION OF THE APPARATUS.

In the portable respiration apparatus the patient breathes into and out of a confined volume of air that circulates through a series of purifiers which remove the carbon dioxide as fast as formed. As the air passes through the lungs of the patient, oxygen is absorbed from the air, with a consequent gradual decrease in the oxygen content. The decrease in the total volume of the air represents the volume of oxygen consumed.

The portable respiration apparatus consists of a mechanical blower to circulate the air, three bottles containing purifying material to remove the carbon dioxide and water-vapor, and a spirometer with suitable piping and connections. The spirometer serves the triple purpose of providing (1) a suitable housing for the mechanical blower; (2) a fluctuating factor in the air circuit to allow for inspiration and expiration, *i.e.*, an expansion chamber; and (3) a measure of the oxygen consumed by means of a direct reading of the level of the spirometer bell at the beginning and end of an experiment.

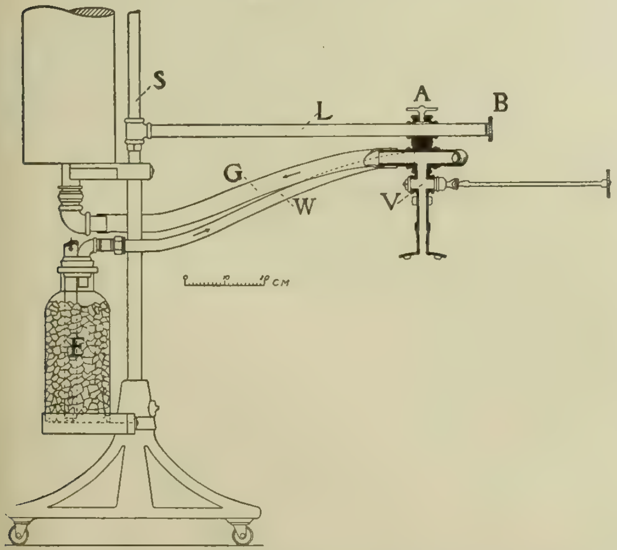

FIG. 1.—Connections with Subject, Portable Respiration Apparatus. *E*, second water absorber; *W*, pipe carrying air to subject; *G*, pipe conducting expired air from subject to spirometer; *V*, 3-way valve between air circuit and mouthpiece; *A*, hand wheel controlling adjustment of 3-way valve and mouthpiece on extension arm, *L*; *B*, hand wheel permitting the raising or lowering of *L* on standard, *S*. The portable nature of the apparatus is indicated by the mounting of base on castors.

After leaving the air-purifying bottles, the air passes through a tube to the patient's mouth. The expired air, containing carbon dioxide, is drawn through a large-caliber tube to the spirometer, from which it is whirled by the blower through the purifying bottles, and thence returned to the patient for rebreathing. The connection with the subject is shown in Figure 1 and the general installation and details of the air-circuit in Figure 2.

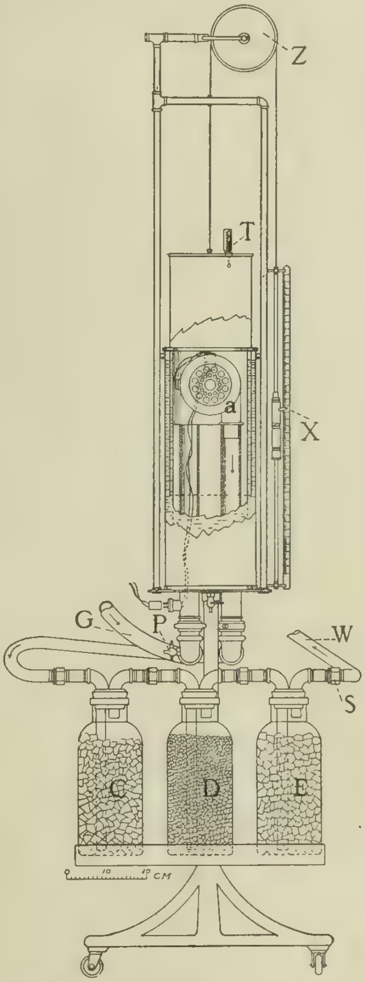

FIG. 2.—Spirometer and Absorbing System of Portable Respiration Apparatus. *G*, large calibre pipe conducting expired air to spirometer; *a*, air-impeller; *C*, first water-absorber; *D*, carbon-dioxide absorber; *E*, second water-absorber; *S*, point at which rate of ventilation may be tested by disconnecting coupling; *W*, pipe conducting purified air to subject; *P*, pet-cock for introduction of oxygen; *T*, thermometer for obtaining records of temperature of spirometer. The spirometer bell is counterpoised by the weight, *X*, attached to silk thread passing over aluminum wheel, *Z*. Scale on which pointer indicates height of spirometer bell is shown at right of *X*.

ROTARY AIR-IMPELLER.

Although this apparatus is a direct development of the universal respiration apparatus,[6] it has many striking similarities to the early "oxygénographe" of Fredericq[7] and the later device of Krogh,[8] and it would be far from our intention to present as "new" the fundamental features of the clever devices of these investigators. In at least one main particular, however, the new apparatus differs from the earlier forms in that the air is circulated not by the lungs of the patient but by an electrically-driven fan. There are no valves to be actuated by the lungs, and the fan does all the work of circulating the air, passing it through the purifying agents, etc. The lungs are thus relieved of the labor forced upon them by many types of respiratory apparatus, and breathing is as free and untrammelled as is possible with any form of breathing appliance. While the universal respiration apparatus and the clinical respiration chamber require a positive blower for the circulation of the ventilating air current, since considerable pressure is necessary to pass the air through the sulphuric acid used to remove the water vapor, the absorbents employed in the new apparatus (calcium chloride and soda lime) offer no material resistance; accordingly a small rotary air impeller may be successfully utilized. We have selected for this purpose a small hair dryer which moves a considerable volume of air but cannot give positive pressure. This hair dryer is light in weight and provided with a universal motor so that it can be used with either alternating or direct current.* The blower must be oiled at least every other day when in constant use. To avoid possible leaks the blower is placed inside the spirometer.

AIR CIRCUIT.

By reference to Figures 1 and 2, it may be seen that the air leaving the mouth of the subject is pushed along a wide tube, G, enters the spirometer, and is discharged by the air impeller, *a,* into a calcium-chloride bottle, C, where the water vapor from the lungs is removed. It then passes through a soda-lime bottle, D, where the carbon dioxide is absorbed, and next to a second calcium-chloride bottle, E, where the water vapor from the soda lime is absorbed. The air, thus freed from both carbon dioxide and water vapor, is conducted through the tube W to a 3-way valve (V, Figure 1) leading to the lungs of the subject.

Unless the volume of respiration is wholly abnormal, the rate of ventilation produced by the blower is sufficient to deliver enough purified air at the junction of the 3-way valve and the main air pipe to supply all that is needed, *i.e.,* approximately 30 liters per minute. If there is unusually rapid and deep inspiration, so that air is, for a moment, drawn back from the spirometer, the extra wide tube, G, provides a minimum resistance between mouthpiece and spirometer.

TEST FOR RATE OF VENTILATION.

The spirometer, when filled, holds about 7 liters. The rate of ventilation may be approximately determined by opening the system at the coupling, S (Figure 2), and pinching the tube W, thus closing the intake of air. Air from the spirometer is then discharged by the blower at the open coupling, and the time in seconds noted for the spirometer to fall completely (350 millimeters). If 15 seconds is required for the spirometer to fall, the ventilation rate is approximately 28 liters per minute.

ABSORBING SYSTEM.

The calcium-chloride and soda-lime bottles are of simple form and, for convenience, are placed upon a shelf attached to the base of the apparatus. The soda lime is made by the formula of Haldane.[9] It has a distinct yellowish tint which changes to a chalky whiteness as the carbon dioxide is absorbed by the reagent. The efficiency of the reagent and the time for renewal may be judged by the progress of this change in color. When a determination of the oxygen consumption only is desired, as is usually the case, the calcium-chloride bottles may be dispensed with. A greater efficiency of soda lime is thus obtained, for it has been found that the moister the soda lime is, the greater is the absorption of carbon dioxide. Indeed, the expired air may be passed directly through the soda lime if care is taken that the excessive absorption of water does not make the absorbent so pasty as to interfere with the free passage of air. As this is a very important point, the ventilation rate should be frequently tested.

If the reagent becomes exhausted the physiological effect is a somewhat labored respiration due to the unabsorbed carbon dioxide acting as a stimulus to the respiratory center. This is not a serious defect and usually has no quantitative significance in the measurement of the oxygen consumed in the 10 or 12 minute period. At the end of the period the motor must be run a few seconds longer to insure a complete absorption of the carbon dioxide in the air by the soda lime.

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* The hair dryer, which is manufactured by the Arnold Electric Co., of Racine, Wisconsin, is purchased without switch, heating unit, or handle, and slightly modified by adding a discharge tube to support the dryer when in position inside the spirometer.

While the labored respiration is evident to the practised eye in a more rapid rate and a larger amplitude of the excursions of the bell, a pneumograph about the chest with attachment for a kymograph record supplies a good picture of the mechanics of respiration and instantly records dyspnea. The excursions of the bell may be directly written on a kymograph by attaching a light pointer to the counterpoise, though the continuous upward trend of the curve as the oxygen is absorbed will permit of but short records.

SPIROMETER.

The spirometer used is a modification of our earlier form of spirometer, the two chief differences being (1) the recessed part which contains the mechanical blower, and (2) the unusual length of the bell. The first provides space for the blower without intricate connections, and absolutely precludes leaks. It is a feature of the apparatus that has proved especially satisfactory in practice. The bell is made of sufficient size to allow not only for a full excursion, if a deep breath is taken, but also for a considerable contraction in total volume of the air in the ventilating circuit as the oxygen is consumed.

To minimize the labor of breathing, the bell is delicately counterpoised by a weight (see X, figure 2) on the end of a silk cord running over a light aluminum pulley, Z, at the top. A pointer attached to the counterpoise shows, on a millimeter scale, the fluctuations in the height of the bell. To indicate accurately the somewhat large temperature changes a light-weight thermometer,* T, is inserted permanently in the top of the bell. To avoid getting water on the blower, and consequent electrical damage, with danger of setting fire to the insulation in the oxygen-rich atmosphere, the water level in the spirometer should be considerably lowered when the apparatus is to be moved on an uneven floor.

ADJUSTMENT TO SUBJECT.

Almost universal adjustment of the mouthpiece is possible by means of the two hand wheels, A and B. (See figure 1.) The former controls the movement of the 3-way valve and mouthpiece around the extension arm, L, as an axis, and also their location on the extension arm, while B permits raising or lowering the arm L on an upright standard, S. The extension arm can also be swung about S within the scope of the two rubber tubes, W and G. With no further adjustment the arm L may be placed in position for a patient either lying in bed or sitting in a chair. When used for experiments with the patient in the standing position, the base is mounted on a wooden box of the desired height.

BREATHING APPLIANCES.

Although, for the sake of simplicity, in this discussion of the portable respiration apparatus, the mouthpiece only is referred to and shown in the diagrams, we have reason to believe that the original form of inflated nosepiece used in the Nutrition Laboratory may be of even greater practical value, inasmuch as it has less influence upon the type of respiration. (See Figure 3.) For these nosepieces, a piece of glass tubing is used with a rubber finger cot attached to one end and a 1-hole rubber stopper at the other. A small hole in the finger cot permits it to be turned inside out, drawn back over the rubber stopper, and fastened in place. Provision is made for inflating the finger cot and fitting it to the nostril by the insertion in the rubber stopper of a piece of small-bore glass tubing with a short length of rubber tubing attached. After the nosepieces are inserted in the nostrils of the subject, the finger cots are inflated by means of a hand bulb. The nosepieces should be tested before an experiment with pressure under water.*

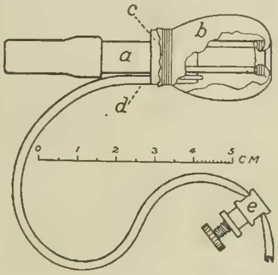

Fig. 3.—Pneumatic Nosepiece. *a*, glass tube to which is fastened rubber finger cot, *b*, which is drawn back over rubber stopper, *c*. A small piece of glass tubing with rubber tubing attached, *d*, serves for dilating the rubber cot, *b*; the clamp *e* closes *d* after *b* is inflated.

Although at first sight the use of a mask in a closed circuit apparatus of this type would seem impracticable, as the slightest leak between the mask and the face would have a pronounced effect upon the measurement of the oxygen, actual experience with the mask in the Nutrition Laboratory has given good results, and it is believed that a little patience in experimenting will make it perfectly possible to use the mask with the new apparatus. This form of breathing appliance is much more comfortable for patients, permitting, as it does, free nose and mouth breathing, without the objectionable features of the mouthpiece, which produces a definitely abnormal respiratory rhythm.

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* At present a small Fahrenheit thermometer is used, as a Centigrade instrument of like weight and temperature range is not available.

* For a full description of these nosepieces, also method of use, see Carpenter, Carnegie Inst. Wash. Pub. No. 216, 1915, pp. 22, 23.

AIR-MOISTENER.

Since with any type of breathing appliance the purified air passing along the tube is too dry to be breathed comfortably by the subject, a small moistening device, consisting of a wire gauze frame covered with linen and thoroughly drenched with water, is inserted in the connection between the mouthpiece, or other breathing appliance used, and the circulating air.*

OXYGEN SUPPLY.

If the whole apparatus is filled with air at the beginning of a period, the percentage of oxygen in the confined air being breathed will fall considerably and might easily reach the point at which oxygen-want would be felt. Consequently, since the spirometer is of generous size and it has been established by Higgins[10] that the respiration of oxygen-rich atmospheres is without effect upon the gaseous metabolism, a liberal supply of pure oxygen from a cylinder is introduced into the system prior to connecting the mouthpiece with the patient and after an equivalent volume of air has been expelled through the 3-way valve. During the experiment the volume of air in the spirometer is decreased by approximately 250 c.c. per minute, or 2½ liters in a 10-minute period. A rough calculation will indicate the probable amount of pure oxygen to introduce. In the course of an experiment there is an exchange of oxygen for nitrogen in the lungs and blood, so that the air in the system contains a little more nitrogen than at first, but repeated tests have shown that the percentage of oxygen in the residual air at the end of a 10-minute, or even 15-minute, experiment is always very considerably above that of the oxygen in outdoor air. Consequently, patients can never suffer from oxygen-want.

EXPERIMENTAL PROCEDURE.

The use of the apparatus should be preceded each day by a test for tightness, which is easily made by placing a 100-gram weight on top of the spirometer. If there is a leak at any point the spirometer will show it definitely in three minutes. After the weight is removed, the motor is started and approximately 2½ liters of pure oxygen admitted from the cylinder through the pet-cock, P (Figure 2). As each millimeter on the scale corresponds to approximately 21 c.c. (the exact value is determined at the time of construction),† this amount of oxygen is sufficient to raise the bell approximately 120 millimeters. The oxygen is best introduced when the spirometer bell is about one-third of the distance above its lowest level, as this allows for exaggerated expiration or inspiration without completely filling or emptying the spirometer.

Since the apparatus is primarily designed for measuring oxygen only, for the time being we need not consider the method of measuring the carbon dioxide. The connection of the subject with the air circuit is controlled by the 3-way valve (see V, Figure 1) which may be opened directly to the room air or, by turning it 90 degrees, connected with the ventilating air circuit. A small double-headed arrow, stamped on the top of the valve, indicates in which direction it should be turned. The opening to the room air usually points down and is not shown in Figure 1. A short elbow is attached to this opening and over the end of the elbow a small piece of goose down is fastened with a bit of wax. The movements of this feather indicate the respiration rate and the end of each expiration.

With the breathing appliance attached, the patient is first allowed to breathe room air through the side opening of the 3-way valve. The temperature of the spirometer bell and the position of the pointer on the scale are recorded, also the barometer,‡ which should be read to the nearest millimeter. As soon as the respiration appears normal, the 3-way valve is quickly turned 90 degrees to connect the subject with the air current. This should be done at the end of a normal (not forced) expiration. At the moment of turning the valve, the exact time is noted, preferably with a stop-watch. Practically no further attention need be given to the subject or apparatus until the end of the experiment. It is preferable to have the subject keep awake during the experimental period, and we frequently find it necessary to tap on the air-pipe to make sure that he has not fallen asleep. At the end of 10 or 12 minutes, the excursions of the bell are carefully watched and at the conclusion of a normal expiration the 3-way valve is again turned, disconnecting the subject from the ventilating air current; the time is then noted. The mouthpiece and nose clips are removed, and the subject lies quietly until another period is begun.

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* All workers in gaseous metabolism should refer to the monograph by T. M. Carpenter (Carnegie Inst. Wash. Pub. No. 216, 1915) for detailed description of respiratory apparatus of practically all the current types, with special reference on pp. 23, 36 and 37 to mouthpiece, nosepieces, and moistening device.

† Seven bells made on the same form gave by actual calibration the following values per millimeter: 20.99, 20.97, 20.86, 20.86, 20.83, 20.97, and 20.97 c.c., with an average of 20.92 c.c.

‡ A good aneroid barometer reading in millimeters is satisfactory, as an error of 7 or 8 millimeters introduces an error of but 1 per cent. in the final calculations.

It is a fundamental rule in this Laboratory that all subjects, prior to measurements of the gaseous metabolism, must be lying down, resting quietly for not less than 30 minutes. The length of time between periods need be determined only by the activity of the operator in recording his observations. After the end of the period one minute is allowed to elapse to insure a thorough mixing of the air and removal of carbon dioxide. When the pointer indicates that the level of the spirometer is constant, this is read and the temperature is recorded.

MODIFIED METHOD FOR DETERMINING THE OXYGEN CONSUMPTION.

In testing several of these apparatus, Mr. Louis E. Emmes, of the Laboratory staff, has had excellent success in determining the oxygen consumption by using a modification of the method outlined in that he reads the spirometer *after* the subject has been connected with the air current. Noting the height to which the spirometer is raised at the end of a series of regular normal expirations, he starts a stop-watch. The experimental period then continues about 12 minutes, when again the height of the spirometer at the end of a series of three or four normal expirations is noted and recorded, and simultaneously the watch is stopped. Using the difference between the two readings as an index of the oxygen consumption, the usual calculations for temperature and pressure are then applied.

The obvious advantage of the Emmes method lies in the fact that while the goose feather over the opening in the 3-way valve gives a fair indication of the end of a normal expiration for determining the moment to begin the experimental period, this point is much better indicated by the actual excursions of the spirometer bell. Mr. Emmes thus uses the excursions of the bell to begin, as well as to end, the period. The two methods may be simultaneously applied and one period be made to include another. This involves only two additional readings of the height of the spirometer bell and two additional time records with a second stop-watch. The use of the modified method is recommended in all cases as a desirable check. A series of tests shows that a somewhat better agreement of duplicate periods may be obtained with the Emmes method.

A still further check may be obtained by making the usual records before and after the valves are turned at the beginning and end of the period, and employing the Emmes method for two additional readings, 10 or 20 seconds apart, at the beginning of the period after the subject has been connected with the air current and again before he is disconnected at the end of the period. Two stop-watches are used for these intermediate records. Thus two sets of readings are secured for control within one 12 to 13-minute period, and in one 15-minute period it is possible to secure readings for three determinations of the oxygen consumption.

At the conclusion of a period, oxygen is again admitted, the initial position of the spirometer read, connections made with the subject as before, and a new period begun. All of this can be carried out without stopping the motor. If, during the first period, a larger amount of oxygen has been introduced than is actually consumed, a little more air can be rejected by turning the 3-way valve and lifting slightly the counterpoise. It is thus seen that the oxygen consumption may be approximately measured by the fall of the spirometer, and the actual computation of this contraction in volume be completed by using the data obtained regarding the temperature and barometric pressure.

DETERMINATION OF CARBON-DIOXIDE EXCRETION.

Although the portable respiration apparatus was designed primarily for studying the oxygen consumption, and the Nutrition Laboratory is uncertain as to the use of mouth-breathing appliances for measurement of the carbon-dioxide excretion of subjects, it is perfectly feasible to get an approximate measure of the carbon-dioxide excretion and an indication of the probable respiratory quotient with the new apparatus. As the increase in weight of the soda-lime bottle, D, is due to the absorption of carbon dioxide, and that of the calcium-chloride bottle, E, to the absorption of water added to the air in its passage through the soda lime, it is necessary only to obtain an accurate weight of the soda-lime bottle and the following calcium-chloride bottle at the beginning and end of the period. If the ventilating current of air entering the soda-lime bottle is dried over calcium chloride to a certain tension of aqueous vapor and air leaves the second calcium-chloride bottle at the same tension, it is obvious that no moisture has been added to or taken away from the system comprising the soda-lime bottle and the following calcium-chloride bottle. Hence the increment in weight of these two bottles, taken as a unit, will indicate the weight of carbon dioxide absorbed from the air as it passes through the bottles. Using the combined weight of the two absorbers and the total length of the experimental period, *i.e.*, the period of time in which the subject is connected with the air-circuit, we may readily calculate the volume of carbon dioxide excreted per minute.

TABLE I. CALCULATION OF OXYGEN CONSUMPTION IN EXPERIMENT WITH THE PORTABLE RESPIRATION APPARATUS.

Apparatus used: Portable respiration apparatus No. 7.	Subject: E. L. F.
Breathing appliance: Mouthpiece.	Date of birth: November 27, 1892.
Date of experiment: March 6, 1918.	Body weight (nude): 74.57 kilograms.
No. of period: 3, 3*a*, 3*b*.	Height: 172.2 cm.

Period 3 began .... 9.46 A.M.	Duration period 3 .... 15′ 47″ (15.78′)
Period 3 ended .... 10.02 A.M.	Duration period 3*a* .... 11′ 9″ (11.15′)
	Duration period 3*b* .... 11′ 26″ (11.43′)

	HEIGHT OF SPIROMETER BELL		
	Period 3	Period 3*a*	Period 3*b*
Beginning	396 mm.	380 mm.	374 mm.
End	193 mm.	231 mm.	221 mm.
Difference	203 mm.	149 mm.	153 mm.

	TEMPERATURE OF SPIROMETER		
	Period 3	Period 3*a*	Period 3*b*
Beginning	84	87	88
End	100	98	99
Av. (°F.)	92.0	92.5	93.5
Av. (°C.)	33.3	33.6	34.2

Barometer, 750.80 mm.

	LOGARITHMS		
	Period 3	Period 3*a*	Period 3*b*
Difference in height of spirometer bell	2.30750	2.17319	2.18469
Volume per mm. of height of spirometer bell (20.92 c.c.)	1.32056	1.32056	1.32056
Temperature of spirometer reduced to 0° C.*	9.94992—10	9.94950—10	9.94865—10
Pressure reduced to 760 mm.*	9.99471—10	9.99471—10	9.99471—10
Corrected volume of air lost in period, *i.e.*, oxygen consumed	3.57269	3.43796	3.44861
Duration of period	1.19811	1.04727	1.05805
Oxygen consumed per minute	2.37458	2.39069	2.39056
OR	237 c.c.	246 c.c.	246 c.c.
Correction for reduction of total vol. of air to 0° C. and 760 mm. (+1 c.c. for each rise of 1° F.)	+16	+11	+11
Corrected volume of oxygen consumed per min.	253 c.c.	257 c.c.	257 c.c.
Average of three measurements	256 c.c. of oxygen consumed per min.		

* For formulae, see Benedict and Tompkins, BOSTON MEDICAL AND SURGICAL JOURNAL, 1916, Vol. clxxiv, p. 943.

The accuracy of the measurement of the carbon-dioxide excretion thus depends largely upon the sensitiveness of the balances used. In the Nutrition Laboratory it is possible for us to weigh the bottles to 0.01 gram; as only about 3 or 4 grams of carbon dioxide are produced in a 10 to 15-minute period, such measurement gives a high degree of accuracy. The balances used for these weighings are, however, very difficult to obtain at present, as they are manufactured in Germany. The nearest approach to this balance in accuracy that we have yet found is the Torsion balance.*

As has been pointed out in an earlier communication,[11] there is frequently a considerable difference between carbon-dioxide excretion and carbon-dioxide production. The measurements of carbon dioxide made with an apparatus of this type can therefore, for physiological reasons, *i.e.*, abnormal respiratory types as a result of breathing through a mouthpiece, be considered only as approximate. They have, however, a distinct usefulness in indicating the probable trend of the respiratory quotient and with trained subjects give a close approximation to the true respiratory quotient.

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* This balance is manufactured by the Torsion Balance Company, 92 Reade Street, New York, N. Y. Their No. 2000 is listed as capable of weighing 4½ kilograms. Sensitivity, 0.15 gram.

METHOD OF CALCULATING OXYGEN CONSUMPTION.

The method of calculating the amount of oxygen consumed in one period of an actual experiment may be illustrated by period 3 of the experiment with E. L. F. on March 6, 1918. (See Table 1.) In the two earlier periods of this experiment, the mask was employed; in this period the mouthpiece was used, and three sets of records were made. The two intermediate measurements are designated for convenience, "period 3-a" and "period 3-b."

The apparatus and breathing appliance used, the date, and the number of the experimental period are first recorded, also the initials, date, of birth, nude body-weight, and height of the subject. The times of beginning and ending the period are likewise recorded, that is, the exact moment the valve is turned connecting or disconnecting the subject with the air-current. The duration of the three measurements of oxygen are given, the figures in parentheses showing these times with the seconds reduced to decimals for convenience in calculating.

In the middle section records are made of the height of the spirometer bell, also the temperature of the spirometer (°F.) at the beginning and end of the complete period and the intermediate periods. From these records the average temperature (Centigrade) of the spirometer and change in height of the spirometer bell are calculated for the three measurements.

In the lower section the cubic centimeters of oxygen per minute are computed by logarithms. The decrease in the volume of air is first calculated from the difference in height of the spirometer bell by means of the factor for this spirometer (20.92 c.c. for each millimeter of change), then reduced to 0° C. and 760 mm. pressure, using the average temperature of the spirometer during the measurements and the barometer record obtained for the period. Thus the logarithm of the spirometer difference for the total period (203 millimeters) is 2.30750; the number of cubic centimeters represented by each millimeter of difference for this spirometer is 20.92, with a logarithm of 1.32056. The logarithms for the average temperature of the spirometer reduced to 0° C. (9.94992-10) and for the observed pressure reduced to 760 mm. (9.99471-10) are also found from tables prepared for the purpose. The total of the four logarithms gives the logarithm (3.57269) for the loss in volume of the air in the apparatus during the period, which is equivalent to the volume of oxygen consumed. No correction is made in this calculation for the tension of aqueous vapor, as it is assumed that the air as measured is dry.* From the logarithm of this volume is subtracted the logarithm 1.19811 for the duration of the measurement (15′ 47″), the result giving the logarithm for the cubic centimeters of oxygen consumed per minute—in this case 237 c.c.

A further correction in the results obtained by this method of calculating is necessary, inasmuch as the total volume of air in the spirometer and air system should be reduced to 0° C. and 760 mm. pressure at the beginning and end of the measurement to obtain the true shrinkage in the volume of air. Such computations have been made for 14 experiments in which from 198 to 272 c.c. of oxygen were used and with temperature fluctuations ranging from 3° to 19° F. It was found that the difference as a result of making this reduction corresponds to + 1 c.c. of oxygen for each degree Fahrenheit of the rise in temperature during the measurement. It is therefore justifiable, for the sake of simplicity, to make an arbitrary correction by adding 1 c.c. of oxygen for each degree of the rise in temperature of 16° F. This gives a value of 253 c.c. of oxygen per minute consumed during the period of 15 minutes and 47 seconds.

The same method is followed in calculating the oxygen consumed during the other two measurements. The agreement for the two intermediate measurements is absolute, that is, 257 c.c. per minute, while the measurement for the whole period of 253 c.c. per minute is not far from the values obtained in periods 3-a and 3-b.

METHOD OF CALCULATING CARBON-DIOXIDE EXCRETION.

The method of calculating the total carbon dioxide excreted during this period is illustrated in Table II. The weights of the soda-lime bottle (D) and the second calcium-chloride bottle (E) are given for the beginning and end of the period and the differences for the two absorbers added to find the total amount of carbon dioxide excreted. The weights are first converted to cubic centimeters by using the logarithm (2.70680) for the factor 509.1, and the cubic centimeters per minute found by dividing by the number of minutes in the period, *i.e.*, 15.78 minutes, with a logarithm of 1.19811. By using the average oxygen consumption per minute, as found in the three measurements, the respiratory quotient is readily calculated. We have therefore, in this period, an average oxygen consumption of 256 c.c. per minute, a carbon-dioxide excretion of 220 c.c. per minute, and a respiratory quotient of 0.858.

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* For the measurement of the total period, this assumption is correct. During the measurements in the two intermediate periods (*a* and *b*) made by the Emmes method, there is unquestionably a certain amount of moisture in the air. Theoretically, corrections should be made for this moisture. It has been shown, however, by means of a sensitive psychrometer placed in the air-circuit, that the percentage of moisture is so small that in practice it may be neglected in the calculation of the oxygen consumption during these short periods.

Table II.—Calculation of Carbon-Dioxide Excretion and Respiratory Quotient in Experiment with the Portable Respiration Apparatus.

	Beginning gms.	End gms.	Difference gms.
Weight of carbon-dioxide absorber (D) ..	4,024.84	4,031.19	+6.35
Weight of second water-absorber (E)	3,175.99	3,176.45	+0.46
Total difference in weight, representing excretion of carbon-dioxide during period 3			+6.81

	Logarithms
Total grams of carbon-dioxide excreted ..	0.83315
Factor for converting grams to c.c. (509.1)	2.70680
Total c.c. of carbon-dioxide excreted	3.53995
Duration of period (15.78′)	1.19811
Carbon-dioxide excreted per minute	2.34184=220 c.c.
Oxygen consumed per minute (256 c.c.) ..	2.40824
Respiratory quotient	9.93360—10=0.858

METHOD OF CALCULATING HEAT OUTPUT.

By means of indirect calorimetry it is possible to compute the calories of energy by using the measurements of the oxygen consumption. Zuntz[12] has computed that each liter of oxygen consumed corresponds to a definite heat output, there being no great difference in this relationship, whether the oxygen is consumed in burning carbohydrate (5.047 calories per liter) or fat (4.686 calories per liter). For practically all purposes, especially for clinical work, one may assume that the average respiratory quotient is 0.82.[*] The calorific value of oxygen at this respiratory quotient is 4.825 calories per liter and 3.377 calories per gram. Consequently, it is necessary only to multiply the liters of oxygen measured by 4.825 to compute the heat output.

SUMMARY OF RESULTS OBTAINED IN ILLUSTRATIVE EXPERIMENT.

A summary of the measurements obtained in the six periods of the experiment with E. L. F. on March 6, 1918, is given in Table III, which shows the carbon-dioxide excretion, oxygen con-

Table III. Metabolism Measurements of Subject E. L. F., March 6, 1918.

(Values per Minute.)

Date of birth, Nov. 27, 1892; body-weight (nude), 74.57 kilograms; height, 172.2 cms.; subject in post-absorptive condition.

Apparatus and Period	Breathing Appliance	Carbon Dioxide	Oxygen: Individual Measurements	Oxygen: Av. for Period	Heat	Respiratory Quotient	Av. Pulse Rate
		c.c.	c.c.	c.c.	cals.		
Portable Respiration Apparatus							
1.	Mask	203	248 247 239	245	1.19	0.83	68
2.	Mask	207	268 265 262	265	1.27	0.78	65
3.	Mouthpiece	220	253 257 257	256	1.25	0.86	65
4.	Mouthpiece	210	260 270 262	264	1.26	0.79	61
5.	Mask	206	259 256 252	256	1.23	0.81	61
6.	Mask	208	260 255 257	257	1.24	0.81	62
Average		209	257	257	1.24	0.81	64
Clinical Respiration Chamber							
1.	.....	205		241	1.17	0.85	65
2.	.....	207		249	1.20	0.83	65
Average		206		245	1.19	0.84	65

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[*] Average respiratory quotient for 88 men and 66 women. Benedict, Emmes, Roth and Smith, Jour. Biol. Chem., 1914, 18, p. 139.

sumption, respiratory quotient, heat output, and average pulse rate for the six periods. The heat was calculated by using the individual quotients. In this experiment the mask was used in the first, second, fifth, and sixth periods, and the mouthpiece in the third and fourth periods. The average carbon-dioxide excretion with the mask was 206 c.c.; with the mouthpiece it was 215 c.c. The average oxygen consumption with the mask was 256 c.c., while that in the two periods with the mouthpiece was 260 c.c. It is thus seen that the results obtained with these two breathing appliances are strictly comparable. The values obtained in two periods of an experiment made on the same day with the same subject, but with the clinical respiration chamber are included in Table III for comparison and show an average value of 206 c.c. for the carbon-dioxide excretion, 245 c.c. for the oxygen consumption and 1.19 calories for the calories of energy. It is of significance that these measurements, made under conditions of somewhat reduced muscular tonus, approximate those found with the portable respiration apparatus.

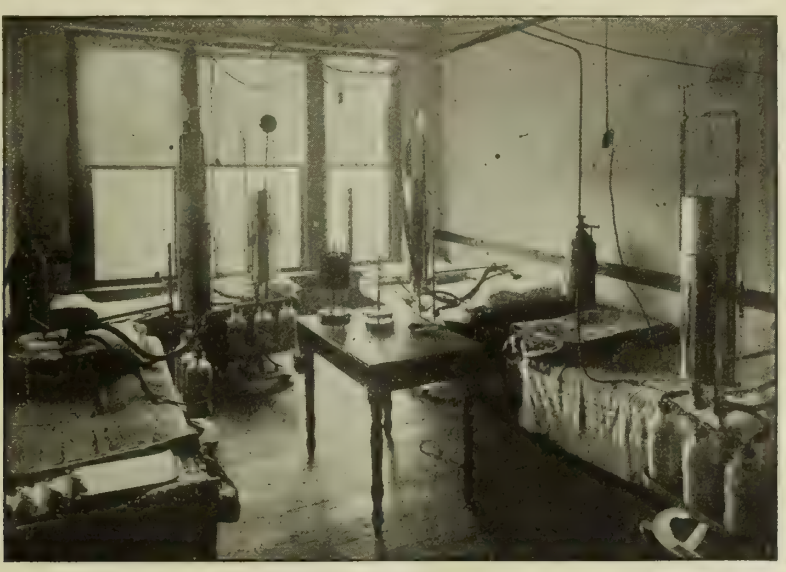

Fig. 4.—Portable respiration apparatus ready for bedside use with four subjects at the International Young Men's Christian Association College, Springfield, Massachusetts.

PRACTICAL USE OF THE APPARATUS.

While the apparatus was primarily designed for clinical purposes, particularly for hospital use, the Nutrition Laboratory recently found itself confronted with the task of measuring simultaneously the basal metabolism of a group of young men between 5 and 6.30 o'clock every morning. Seven of these apparatus were constructed and were in continuous use at the International Y. M. C. A. College, Springfield, Mass., between September, 1917, and February, 1918. Every morning two 10-minute periods were obtained with each of seven subjects. One of the laboratory rooms is shown in Figure 4 with four of the apparatus and the accompanying beds. Subsequent tests have demonstrated that the portable respiration apparatus meets all the exacting requirements of the Nutrition Laboratory as an instrument for clinical work.*

From the foregoing description it will be seen that this apparatus dispenses with gas analysis and for the most part with weighings of any kind. By reading the millimeter scale indicating the height of the spirometer bell, the thermometer in the top of the spirometer, and the barometer, we may obtain all the data required for rapidly computing the oxygen consumption and the heat production. As the apparatus is more especially designed for clinical work, it cannot be substituted in exact studies of the metabolism for the method outlined by Dr. Carpenter, namely, a closely fitting mask, Tissot valves, a carefully calibrated spirometer, a good gas-analysis apparatus, and, most important of all, a good gas analyst.[13] Neither can it give the results obtained with the universal respiration apparatus and the perfected form of the clinical respiration chamber. It has, however, the advantages of portability, simplicity, and rapidity of operation, with a sufficient degree of accuracy to meet the needs of practically all clinical work.

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* One of these apparatus has already been supplied to the Battle Creek Sanitarium for the use of Dr. Paul Roth.

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Book Reviews.

Neurosyphilis. Modern Systematic Diagnosis and Treatment. By E. E. Southard, M.D., Sc.D., and H. C. Solomon, M.D. Boston: W. M. Leonard. 1917.

This book is Monograph No. 2 of the Psychopathic Hospital of Boston, and is a most welcome contribution to our knowledge of this condition. The plan of the book, that of the "case method," gives a most excellent idea of the bewildering variety of clinical pictures which may be produced by the various forms in which syphilis may attack the nervous structures. The abundant material at the Psychopathic Hospital has given a large number of cases with which the authors have been able to illustrate the clinical varieties of neurosyphilis. One must admit that the case history method of presentation of any subject in medicine has its limitations, and these natural limitations are, in our opinion, more serious when one is treating of this subject of neurosyphilis than in the handling of many other subjects. However this may be, the illuminating comments and questions following the notes of each case do much to throw light upon, and to suggest new points of view in regard to the many problems which come up in connection with this class of cases.

It is particularly to be commended that the writers, throughout the book, keep so constantly before the reader the pathologico-anatomical differences in the cases according to whether the structures affected are vascular, meningeal or parenchymatous. On reading this book, however, one cannot help wishing that the authors, from their abundant material and experience had devoted more space to a fuller and more systematic discussion of the many problems of neurosyphilis, especially to the one for which they seem so well fitted,—the relation of symptoms to pathological changes.

One or two other points deserve further mention. Too much stress and importance, throughout the book, are laid upon the various laboratory tests, both of the blood and of the spinal fluid, and that both in regard to diagnosis, and as a guide to treatment. All physicians recognize these tests as of the greatest help. But at the present time a word of caution in regard to placing implicit trust in them is not out of place in any authoritative book. The view of most neurologists and internists of large clinical experience is that usually too much reliance is placed upon these tests rather than too little, as one might suppose from remarks here and there throughout the book. No hint is given of such things, not uncommon in experience, as the finding of positive Wassermann or gold chloride tests in cases of glioma of the brain or other non-syphilitic diseases of the nervous system. Again one could wish for more systematic and fuller discussion of the great question of the treatment of these forms of disease. The effect of treatment in cases of paresis is given in much too rosy hues. So far as is known to the reviewer, literature on this subject fails to reveal a single undoubted cure of this disease by any method, though some of the more recent methods in particular seem to warrant some small hope of cure, if applied vigorously in early cases. We must admit that the present pessimism of most neurologists in this matter, to which the authors themselves refer, is justified fully by our present knowledge.

Two minor points may be mentioned, in addition, which might be remedied. Such a misstatement as that in page 430, that the modification of the law in regard to commitments of the insane has given to hospitals a "great group of cases formerly not at all accessible to hospital diagnosis and treatment," should certainly be modified in future editions of this book. It also is a pity to see such an excellent book marred by the constant repetition of such a barbarism as the use of "insult" in the German sense of the word.

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THE PRESENT STATUS OF VENEREAL PROPHYLACTICS.

The modern tendency to hygiene is seen in nothing more plainly than in the public discussion of venereal diseases and their prevention, which are no longer considered forbidden topics by educated persons. In some reviews and newspapers measures of personal prophylaxis for those who are about to expose themselves, or who have exposed themselves, to possible infection, are enjoined in the case of members of the naval and military forces. These prophylactic measures are spoken of, both in the medical and lay press, as highly efficient. The result is that the public has been led to believe in their practical safety and certainty. This is decidedly unfortunate in view of the fact that there is no germicide or method of medical prevention which can be regarded as absolutely prophylactic.

Many authorities take the view that calomel cream and germicidal solutions would stamp out venereal diseases, especially gonorrhea, but they state that, in advocating them before exposure, medical men and officials overstep the limit of what is permissible in prophylaxis. Other authorities—and these are the most recent—state that the use of prophylactic outfits stimulates vice and provokes disease, and that if a stage of great improvement is reached by the public it will be due to moral causes. This is a question of crucial importance.

In order to obtain the most enlightened and detached educational opinion, we submitted the matter to Dr. Charles W. Eliot, of Harvard University. We found that his views are in thorough harmony with the growing feeling of the educated, and particularly the medical public, that further efforts are urgently needed to prevent the spread of venereal diseases. He said:

"It is a question of effectiveness in checking this scourge. What is the most effective thing to do? There are two chief methods,—public clinics and prophylactics,—that is, after exposure. The issue of prophylactic packets, as a matter of course, I think a harmful suggestion. To issue a prophylactic packet to every soldier or sailor who is having a leave of absence is to make an inexpedient suggestion to the young men. But I regret to say I have encountered a good many physicians who do not seem to think that suggestion inexpedient. It is an urgent practical question whether an agreement can now be reached among medical men, army surgeons, and the ordinary laymen who think on these subjects. This seems to be the precise point to work at. I am very much in favor of attending to the next thing to be done, rather than to some far-off object. It is a matter of practical effort. I believe that, as a protective or defensive measure, the public is ready for the venereal clinic or dispensary."

This opinion coincides in most respects with that enunciated at the latest meeting of the National Council for Combating Venereal Diseases. This body, after the examination of many witnesses and much careful consideration, has come to definite conclusions, which are wholly in favor of moral, social, and legal measures, that is to say, of accurate and enlightened information, venereal clinics, and the punishment of persons who deliberately infect others.

An attempt has also been made to obtain precise statistical information of the value of prophylactics, that is, calomel, bichloride of mercury and germicidal injections, but for fairly obvious reasons the information obtainable is incomplete. The best statistics are based upon a comparison between 100 cases in which these prophylactics are used and of 100 cases in which they are not. Even this method does not cover all the details of the matter. These are most explicitly described in a statement by Mr. E. B. Turner, F.R.C.S., published in the *British Medical Journal* of February 16, 1918: "With regard to the whole question at issue of prophylactic outfits, my personal opinion is that it might not be much real use in diminishing the actual number of cases of venereal diseases occurring in the army. In the first place, no one can say that the methods afford absolutely certain and sure protection from the infection either of gonorrhea or syphilis." As a matter of experience, he finds that they do not, and he points out that even the best methods may fail, because they require for their application a cool head and deft hands. Again: "If a man incurs the risk of infection three or four times in a few hours, it is very improbable that before each performance he is likely again satisfactorily to protect himself." There are other circumstances incidental to sexual indulgence which deprive prophylactics of their effect, or rather, put them out of the question altogether. It is absurd to think that men and women will arm themselves with packets for their love affairs; yet it is in these circumstances that venereal infection is spread. On this particular phase, Mr. Turner writes: "Of 100 men, only 28 had got the infection from professional prostitutes." From this he infers that prophylactics have only a limited application, while there are no limits to venereal diseases, and not even a peace of exhaustion ever comes to them.

The Army and Navy statistics relate only to a limited, though most important, body of men. They show a large admission rate, especially for gonorrhea, since prophylactics were introduced. Syphilis appears to be less affected, the admission rate for this disease remaining much the same. But the position of syphilis is altogether different from that of gonorrhea. It has been found that 17% of recruits for the United States Navy are infected with syphilis, and 18.9% of British recruits. According to Dr. Richard C. Holcomb, U.S.N., the admission rate for gonorrhea, before the introduction of prophylaxis, was 47.23 per 1000, but that it has been raised to 91.91 per 1000 since the "propaganda" began (*Military Surgeon,* 1916, Vol. 38).

Prison statistics are more precise, that is, statistics as to venereal diseases among prisoners, warders, guards, and soldiers who garrison civil and military prisons. These figures show that a very large proportion of the population is infected with syphilis, and that the spread of all venereal diseases is too insidious to be dealt with easily. Professor Charles Ruata of the University of Pavia, writes that it is best to put into the hands of soldiers the simplest means which will enable them to protect themselves. Of these, he states soap and water is the best; the ointment of calomel is not practical at all. "Since advising soap and water I have for thirty years no more cases of venereal disease among my guards" (*The Lancet,* November 3, 1917). With this opinion most authorities today agree. The value of such prophylactics as soap and water and urination after intercourse is that they are practical and their use can be enforced with some success.

All authorities agree that it is a mistake to rely too much on any of the chemical agents—calomel, bichloride, injections of silver salts. A great change has taken place in medical opinion. From the exhaustive account of prophylaxis in the articles of Blaschko in the *Deutsche Strafrechtszeitung* and other journals, it is clear that the present Teuton program is much the same as the British. In addition, he would abolish houses of prostitution, being in favor of what is called neo-reglementation, under which both sexes are treated alike, and men would be examined for venereal diseases before marriage. As to toleration and medical inspection, he believes that their merits are greatly overestimated. "The doctor's certificate," he says, "does not guarantee safety." Apparently the war has had the effect of making many medical illusions fade away. Blaschko's opinions seem to be the prevailing ones in Germany today, as the recent meetings at Mannheim and in Galicia indicate.

The war has had another effect. The advance in our knowledge of antiseptics has caused a notable change in the position of calomel. It is too insoluble to be an effective or even a trustworthy prophylactic for syphilis and gonorrhea. In a recent number of the *Annales des Maladies Vénériennes,* Gaucher states that its effect is uncertain—whether it be applied in the strength of ten, thirty, or fifty per cent. in lanoline and vaseline, whilst its use before intercourse is an incentive to take risks. "It is to be feared," he writes, "that the prophylactic packet will be a danger by giving the interested a sense of false security."

The upshot of all these reports and discussions is that there has been a progressive increase in the precision and success with which hygienic methods have been employed. Venereal clinics and instruction centers are now established in England and Germany, and in Germany punishment is meted out to those who infect others. The best methods by which venereal diseases can be attacked are now considered moral and hygienic and penal. Obviously, if those contaminated with syphilis and gonorrhea could be prevented from infecting others, much venereal disease would disappear.

* * *

THE ONE HUNDRED AND FOURTH ANNUAL REPORT OF THE MASSACHUSETTS GENERAL HOSPITAL.

The one hundred and fourth Annual Report of the Massachusetts General Hospital, including, besides the General Hospital in Boston, the McLean Hospital and the Convalescent Hospital in Waverley, has been submitted for the year 1917. The past year has been an eventful one, for many changes have been made necessary because of the active participation of many members of the staff in war service.

Both because of the absence of so many who are engaged in military work and because of the need of economy, a number of departments —including the Convalescent Hospital, the Cement Shop, the Industrial, Psychiatric, and Consultation Clinics, and the Hydrotherapeutic and the Medico-Mechanical Rooms—have of necessity been temporarily closed. Despite, however, this curtailment, the various departments have been supported by the efficient coöperation of their members, and have rendered satisfactory and increased services to the patients and the community.

The report of the General Hospital shows a patriotic response to the demands upon its services. In July, a unit was organized for service abroad, and is now serving in France as the United States Army Base Hospital No. 6. under the command of Major Frederic A. Washburn. This unit consists of twenty-six officers, sixty-six nurses, and one hundred and fifty-five enlisted civilians. The Hospital is grateful to the American Red Cross Society for the financial support which it furnished in the preparation and transport of the unit.

In response to a request made by the Commandant of the Naval Hospital in Chelsea, patients from the enlisted force of the Navy and Marine Corps have been accepted since October.

In order to conform with the requirements of the War Department, the term of service of surgical and medical internes has been temporarily shortened, in order to make hospital-trained physicians available for military service as soon after graduation as practicable.

The Nursing Department, in addition to the regular work of the Training School, has admitted to its wards for ten days' practice work seventy-four Red Cross Nurses' aids.

The Out-Patient Department, although the war has deprived it of twenty-eight members of its staff, has been able to maintain its usual high standards. Notwithstanding the fact that the size of the clinics has been considerably reduced, the total amount accomplished during the year shows an increase compared with previous years.

The Roentgenological Department has been able to increase the efficiency of its work by the additional space and equipment which has been made available. This department has been opened to physicians who are engaged in x-ray work, in order to offer to radiologists of smaller towns and hospitals an opportunity to work in a large clinic where problems in technic and diagnosis can be studied.

In the Medical Department, investigative work has been very largely held up because of war conditions. In the Children's Medical Service Department, however, investigations are still being conducted. Other departments, particularly the Surgical and Orthopedic Departments, have been deprived by the war of many members of their staffs, but have been conducted, nevertheless, with satisfactory service. The Syphilis and Dermatological Departments have conducted active and satisfactory work throughout the year. The clinics for pulmonary and non-pulmonary tuberculosis had many new patients, and the infantile paralysis clinic has been of great service. The usual work of the pathological laboratory has been carried on as in previous years.

A private ward has been opened in Phillips House for the reception of patients who have the right to employ their own physicians, provided they are members of the hospital staff or alumni. A portion of this ward is devoted to the Maternity Department.

The work of the Social Service Department has been increased considerably because of the closing of the Convalescent Hospital at Waverley. The Ladies' Visiting Committee has rendered valuable service to this department.

The one hundredth report of the McLean Hospital shows limitation in its medical work because of the enlistment of one-half of its medical staff in the service. The medical work presents, however, several features of interest, specially in the treatment of general paralysis by both intravenous and intraventricular methods, and in the treatment of cerebrospinal meningitis by intraspinal and intraventricular administration of antimeningitis serum.

Detailed information and statistics concerning the reports of the various departments of the Hospital may be found in the Annual Report.

The financial situation of the Hospital has felt the strain of the demands which the war has necessitated. The increased cost of everything used in the Hospital has resulted in a deficit, in spite of the severest economy which has been practised. The Hospital is indeed grateful for the donations to the general fund of over $28,000, and to the restricted fund of more than $84,000. Appreciation is also expressed for the voluntary services which have been given to the Hospital.

In looking forward to the future development of the Hospital, it is felt that a great effort should be made to render its expensive equipment and scientific organizations available to all classes for professional services. It is particularly urgent that the problem of providing for the large middle class in the community be solved. All citizens of Massachusetts are earnestly implored to give all they can toward the support of this great charitable service.

* * *

MASSACHUSETTS SCHOOL OF PUBLIC HEALTH.

A nearly complete list of speakers for the Four-Day Free School of Public Health, to be conducted by the Massachusetts Medical Society, with the coöperation of the State Department of Health, the Massachusetts Association of Boards of Health, and the U. S. Public Health Service, is as follows:

Prof. Robert Spurr Weston, Consulting Sanitary Engineer; Mr. M. C. Whipple, Instructor in Sanitation at Harvard University; Mr. Harry W. Clark, State Department of Health; Dr. Francis H. Slack, Instructor in Diagnostic Laboratory Methods in the Harvard-Technology School of Public Health; Miss Edith A. Beckler, Bacteriologist of the State Department of Health; Mr. A. W. Hedrich, Secretary of the American Public Health Association; Dr. J. P. Bill, Instructor in Preventive Medicine at Harvard Medical School; Mr. John Ritchie, Jr., Former Health Commissioner of Boston; Prof. G. C. Whipple, Massachusetts Institute of Technology; Dr. John S. Hitchcock, Director of the Division of Communicable Diseases, State Department of Health; Dr. Walter E. Fernald, in charge of the Massachusetts School for the Feeble-Minded; Dr. John B. Hawes, Secretary of the State Anti-Tuberculosis Association; Dr. David L. Edsall, Specialist in Industrial Hygiene; Passed Assistant Surgeon A. J. Lanza of the U. S. Public Health Service; Prof. P. G. Stiles of Harvard Medical School; Dr. W. W. Peter, Director of Public Health Education in China; Dr. Dorothy Reed Mendenhall of the Children's Bureau; Dr. George H. Wright, Lecturer in the Harvard Dental School; Dr. L. D. Bristol, Health Commissioner of the State of Maine; Miss Anne H. Strong, Assistant Professor of Public Health Nursing, Simmons College; and Dr. E. R. Kelley, Sate Commissioner of Health.

* * *

MEDICAL NOTES.

Maternal Nursing and the War.—According to Dr. Julius Levy, director of child hygiene, New Jersey, an increase of two months in maternal nursing would be of considerable aid to the war. This program would make available for war purposes 140,625,000 quarts of milk, 14,062,500 pounds of sugar, and 2,500,000 bottles, in addition to the fuel and other utensils required in the preparation of milk for infant consumption. This would represent an outlay by the mothers of the country of at least $25,612,500. Dr. Levy affirms that the adoption of this principle would also increase the happiness of mothers and insure the life and health of the children.

Paris Anti-Cancer Institute.—An Anti-Cancer Institute will be founded soon in Paris. It will be similar to those working in London, New York, and Chicago, and to the one established by Czerny at Heidelberg. All patients, rich or poor, suffering from tumors, will receive the care required for each particular case. There will be laboratories for the use of students, regardless of their nationality, who are interested in the study and treatment of cancer.

Infant Death Rate in New Zealand.—The infant death rate in New Zealand is the lowest in the world. How this is accomplished has been explained by Dr. F. Truby King, a physician of that country. For the past twelve years, there has been manifested in New Zealand an increasing interest in the welfare of mothers and children, with a result that the infant death rate has been reduced to 5%, and the health of survivors has been greatly improved.

This work in New Zealand was begun by private individuals; but it was soon increased by the formation of a voluntary society called the "Society for Health of Women and Children," or the "Plunket Society." The first branch was formed in Duneden, and consisted of a committee of twenty-five earnest and capable women. There are now eighty branches. A little later, the Government became interested and granted subsidies of one dollar for each dollar privately subscribed toward the payment of trained nurses sent out by the Society. The Government has now increased its assistance by granting subsidies of six dollars for every five dollars voluntarily subscribed, by subsidizing the society's baby hospital, by granting free passes over government railways, and by the publishing and issuing of pamphlets. This work is untouched by politics; it is the result of the utmost devotion and enthusiasm of the various committees. The newspapers have been an important factor in the success of this infant welfare work, and should be commended for their coöperation.

WAR NOTES.

Wounded Soldiers from France.—One hundred and thirteen sick and wounded soldiers, of the American Expeditionary Forces, were landed in the United States during the week ending Friday night, April 26.

Appointment of Major Bogan.—Major Frederick L. Bogan, of Boston, has been appointed commanding officer of the 102d field hospital, the highest rank next to that of division surgeon.

Souvenirs from France.—Dean Bradford, of the Harvard Medical School, has received from Dr. Harvey Cushing, head of the Harvard medical unit in France, a collection of souvenirs, including several pathological specimens from cases of cranial injury. These gifts will be placed in the Warren Museum.

Appointment of Dr. Lee.—Major Roger I. Lee, chief medical officer of the Harvard surgical unit which sailed almost a year ago, has been appointed commanding officer in place of Col. Patterson.

Army Health Conditions.—The number of deaths last week was 251, against 208 the previous week. Pneumonia was not so prevalent. In the Regular Army and the National Guard, the number of deaths has increased, but the National Army shows decrease from 160 to 113. In the aviation section, nine deaths have resulted from accidents.

Promotion of Dr. Wheaton.—Dr. James L. Wheaton, of Pawtucket, R. I., has been promoted to the rank of major in the Medical Corps of the Regular Army.

Smith College Unit.—The American college girls of the Smith College unit have displayed conspicuous bravery in attending the wounded and civilians under fire during the recent German advance. The girls have been engaged in the work of rehabilitation in the Somme district. Because of the advance of the enemy, they have been forced to retreat to Verlaine and Esmery-Hallon, where they have rendered admirable service in the care of old refugees and children.

During the German drive, the unit has lost its entire equipment, with the exception of three motor cars. The girls have been praised especially for their work just before the Germans reached Ham. They not only evacuated their own villages, but assisted in the evacuation of the Nesle Hospital. As soon as they reached Montdidier, a coffee station was improvised, and a temporary children's hospital was installed in a hotel.

Later the Red Cross asked for helpers for Amiens, and five of the girls were chosen. During their first night, the town was bombed again and again by the Germans. Half of their time was spent in cellars and the other half in rendering what services they could to the civilians. Finally, the girls were forced to move to another town, where they offered their services to the French authorities and helped to feed the wounded who were passing through the town. While awaiting further opportunities to be of service, the girls have been engaged especially in visiting English-speaking wounded in several of the hospitals, giving them cigarettes, writing letters for them, and attending to their wants.

The girls have worked hard and have been in constant danger, but all declare that they would gladly begin the work all over again.

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending May 4, 1918, the number of deaths reported was 275, against 266 last year, with a death rate of 18.28, against 17.96 last year. There were 42 deaths under one year of age, against 40 last year.

The number of cases of principal reportable diseases were: diphtheria, 59; scarlet fever, 33; measles, 326; whooping cough, 45; tuberculosis, 84.

Included in the above were the following cases of non-residents: diphtheria, 13; scarlet fever, 14; measles, 9; whooping cough, 1; tuberculosis, 2.

Total deaths from these diseases were: diphtheria, 4; scarlet fever, 1; measles, 6; whooping cough, 5; tuberculosis, 30.

Included in the above were the following non-residents: diphtheria, 1; measles, 1; whooping cough, 1; tuberculosis, 1.

NEW ENGLAND ROENTGEN RAY SOCIETY.—A meeting of the New England Roentgen Ray Society was held at Camp Devens May 4. The society was the guest of Major Ernest L. Davis, who read a paper based on his study of a large number of lung conditions, especially in cases of pneumonia. Major Lewis Gregory Cole of Base Hospital No. 1 (New York) was a guest of the Society and led the discussion of Major Davis' paper.

NEW HARVARD DEAN.—Dr. Algernon Coolidge has been made acting dean of the Graduate School of Medicine and acting chairman of the College Library Council. Dr. Coolidge is taking the place of Dr. Alexander S. Begg, who is now in active service.

DENTAL CLINIC DESTROYED.—The dental clinic at the Tufts Medical School has been destroyed by fire, with a damage amounting to $25,000. The students aided in saving the fittings of the dental room and the property used for research purposes. The work of the clinic will be carried on in another building.

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS.—The Massachusetts Society of Examining Physicians at its annual meeting at the Copley-Plaza, on April 26, 1918, elected the following officers:

President, Dr. Frank E. Schubmehl, General Electric Company, Lynn.

Vice-Presidents, Dr. Herbert H. Howard, Boston; Dr. C. S. Benson, Haverhill; Dr. John E. McCartin, Boston.

Secretary, Dr. J. H. Stevens.

Treasurer, Dr. John S. Phelps.

Councillors, Dr. F. J. Cotton, Boston; Dr. J. F. Edgerly, Lincoln; Dr. W. P. Coues, Boston; Dr. F. J. Hanley, Whitman; Dr. R. C. Gwynn, Boston.

The Society voted to oppose Senate Bill No. 345, which proposes to give the re-education and rehabilitation of injured industrial workers to the State Board of Education. It was the sense of the Society that such power should be conferred upon the Industrial Accident Board.

HOME FOR AGED WOMEN, BOSTON.—The sixty-eighth annual report of the Home for Aged Women, Boston, has been submitted for the year 1917. The death of two of its members, Miss Sarah H. Crocker, one of the vice-presidents, and Miss Zilla Baker, head nurse, is recorded with regret.

The health of the inmates of the Home has been better than could reasonably be expected. The number of infirm cases has gradually increased, due largely to the increased minimum age requirement.

There has been an average of 88 inmates throughout the year. There are 137 on the waiting list.

During the year, the women of the Home have engaged in war work with remarkable energy, and have completed nearly three thousand articles of various kinds.

The Home has received bequests amounting to over $35,000. The friends of the Home are earnestly urged not to forget the growing needs of this institution.

Miscellany.

COUNCIL OF NATIONAL DEFENSE.

Some of the Activities and Interests of the General Medical Board of the Council of National Defense, April, 1917-April, 1918, as Reported at the Annual Meeting, Sunday, May 5, 1918, New Willard Hotel, Washington, D. C.

The following statement, which is authorized by the Medical Section of the Council of National Defense, is a brief summary of the report of Dr. Franklin Martin, member of the Advisory Commission and chairman of the General Medical Board of the Council of National Defense, with mention of some of the leading interests and activities of the year of the Board and of the Medical Section, presented at the annual meeting of the General Medical Board, May 5, 1918.

GENERAL.

Secretary of War Baker, on April 2, 1917, authorized appointment of General Medical Board. Dr. Martin designated 35 physicians and surgeons, many of whom have since entered on active service abroad. Total now is 77. Executive Committee consists of Surgeons-General of Army, Navy, and Public Health Service, Dr. Franklin Martin, Dr. W. J. Mayo, Dr. William H. Welch, Dr. Victor C. Vaughan, Dr. F. F. Simpson, Rear Admiral Cary T. Grayson, and Dr. William F. Snow, Secretary. The first meeting was held April 9, 1917.

Requested medical men returning from abroad to furnish information regarding conditions observed in medical services of allied armies, which information was carefully summarized for reference.

Responded to request of Surgeon-General to assist in increasing enrollment in Medical Reserve Corps. Enrollments in M.R.C. have been increased from 1800 in April, 1917, to over 21,000, of which 16,042 are on active duty.

Requested 50 medical societies to furnish lists of their members fitted to perform special work for Government.

CHILD WELFARE.

Formed Committee on Child Welfare, comprising representatives of several government departments, educational institutions and national organizations, to coördinate child welfare activities, and formulated program covering problems of the child up to school age, which program has been issued to the states through the medium of the States Council Section and the Woman's Committee of the Council of National Defense.

Appointed committees: (*a*) to study best graphic methods of teaching child welfare; (*b*) to study food values necessary to children and prepare dietaries; (*c*) to report best procedure as to mid-wife question in present war emergency; and (*d*) to consider advisability of investigation of institutions caring for children.

CIVILIAN COÖPERATION IN COMBATING VENEREAL DISEASES.

Developed joint conferences of medical and lay citizens in 50 cities with officials, to discuss plans for venereal disease clinics or law enforcement measures.

Formulated list of eight measures essential to successful campaign against venereal diseases, and sent to State Boards of Health.

Appealed to State Pharmaceutical Associations for Boards of Pharmacy to assist in eliminating sale of nostrums.

Arranged trips for lecturers who aided Boards of Health in 30 states, and stimulated them to more vigorous work.

Partially as a result of correspondence with State Boards of Health, 26 states have adopted measures requiring reporting of venereal diseases, 9 have special venereal bureaus, 14 provide free laboratory diagnosis, 6 provide arsphenamine, practically or absolutely free. Only 7 states classified as complacent.

Partially as a result of letters to 1000 mayors, 49 cities provide for isolation and treatment of venereal cases, 51 require reporting of venereal diseases, 43 have clinics, 78 are conducting educational work.

Informed editors of health bulletins and labor journals of details of campaign against venereal diseases.

Distributed printed material and sent personal and circular letters to thousands of persons in communities adjacent to army camps, enlisting their coöperation.

DENTISTRY.

Appealed to dental profession through various dental associations, materially increasing enrollment in Dental Officers' Reserve Corps.

Instrumental in having military instruction included in curricula of dental colleges, and in having applicants for enrollment in Dental Surgeons Corps specially trained.

Coöperated with manufacturers in having dental instruments and supplies standardized.

Secured volunteer services of civilian dental profession in eliminating dental disabilities of recruits.

Recommended improved courses in dental surgery in Army and Navy medical schools.

Initiated investigation as to relation of trench mouth disease to oral and general disease.

Dental Committee recommended higher rank for dentists in Army Dental Corps.

HOSPITALS.

Recommended to general hospitals reorganization of staffs, in order to release as many as possible for Army and Navy service, and urged each person whose services could be spared to apply for appointment.

Hospitals classified exhaustively as to size, convenience to transportation, equipment, and all other details.

Investigated subject of portable hospitals, and recommended purchase of a limited number by the Surgeon-General of the Army.

Classified and tabulated for use of Surgeon-General's office data as to private houses and large buildings offered for use as military hospitals.

HYGIENE AND SANITATION.

Recommended to War and Navy Departments that zones around camps and cantonments be placed under military control in order to protect troops from venereal infections. Encouraged organization of Fosdick Commissions or Training Camp Activities.

Appointed sub-committees on drug addictions, alcoholic control, public health nursing, tuberculosis, and health statistics, which committees have assembled information and recommended definite sanitary measures for guidance of Army, Navy, Public Health Service, American Red Cross, and Civil Health Agencies.

Work of sub-committee on venereal diseases has expanded, and it has become the Committee for Civilian Coöperation in Combating Venereal Diseases, a general committee of the General Medical Board.

INDUSTRIAL MEDICINE AND SURGERY.

Instituted an Advisory Committee on Industrial Hygiene, comprising representatives from Public Health Service, Departments of Agriculture, Interior, Commerce, Labor, and of Organized Industry, Organized Labor, Organized Medicine, and Organized Industrial Medicine, for the purposes of providing against unnecessary human waste in industry and society during war, to offset drain of man-power from industry through raising of military forces to meet need for increased production, to avoid preventable deaths from accidents and disease, and to improve surroundings of workers.

LEGISLATION.

Drafted Section of Army Bill eliminating sale of alcoholic drinks and prostitution in five-mile zone around camps and cantonments; indorsed by Council of National Defense, and enacted into law within ten days of original rough draft.

Induced authorities to provide for enlistment of medical students of well-recognized schools in Enlisted Medical Reserve Corps, and completion of course before being called into military service. Similar effort made in aid of premedical students.

Instrumental in having American concerns licensed to manufacture salvarsan, and other German-owned medicinal preparations. Quantity previously sold for $4.00 now furnished Government at $1.00.

Made considerable effort to have rank of medical officers made commensurate with the service which the nation expects from the profession.

MEDICAL SCHOOLS.

Urged students to continue medical education so that upon entering government service they might be fully trained; also urged students to apply for commissions in Medical Reserve Corps upon graduation.

Urged schools to release teachers for enrollment in Medical Reserve Corps.

Asked heads of educational institutions to advise pre-medical students to enroll in medical schools of their choice as soon as possible.

Asked medical schools to allow fourth-year students to substitute senior year in base hospital instead of school, if emergency arises.

MEDICAL WAR MANUALS.

Published four war manuals: 1, "Sanitation for Medical Officers," by Edward B. Vedder, M.D., Lieut.-Col., M.C., U.S.A.; 2, "Notes for Army Medical Officers," by T. H. Goodwin, Lieut.-Col., R.A.M.C.; 3, "Military Ophthalmic Surgery," by Allen Greenwood, Major, M.R.C., G. E. de Schweinitz, Major, M.R.C., and Walter R. Parker, Major, M.R.C., and, 4, "Military Orthopedic Surgery," by the Orthopedic Council.

These also are ready for publication: "Surgery of the Zone of Advance," by George de Tarnowsky, Major, M.R.C.; "Notes on Military Surgery," by George W. Crile, Major, M.R.C., and "Lessons from the Enemy," by John McDill.

NURSING.

Instrumental in increasing by 20% number of pupil nurses in training schools, by means of correspondence with college and school graduates, deans of women's colleges, school principals and Board of Education secretaries.

Distributed about 100,000 bulletins and leaflets for information of prospective students.

Made nation-wide survey of country's nursing resources, and urged heads of training schools and hospitals to increase their facilities.

Published series of 12 articles on nursing in newspapers throughout the country.

Instrumental in having nurses included in War Risk Insurance Law.

Secured evidence of need for military rank for nurses, and secured indorsements of this movement from many persons.

Conducted campaign for increasing number of candidates for nursing education.

Coöperated in preparing details of preparatory nursing course for college graduates at Vassar College.

Recommended to Surgeon-General of the Army that increased accommodations for nurses be made at camps, that not less than one nurse be provided to six acutely ill men, that there be a reserve of not less than 25 nurses at each camp hospital, and that a qualified nurse tour military and naval hospitals to make observations; all of which recommendations have been favorably received. Miss Annie W. Goodrich appointed Inspector-General of Nursing Service in all military hospitals in the United States and France.

Recommended to superintendents of training schools to speed instruction and hold final examinations and graduations early in 1918, and release graduates for government service.

Coöperated with Red Cross and with National Organization for Public Health Nursing in enrollment of public health nurses in office of Red Cross, and urged public health nursing agencies to release staff members for service in extra-cantonment zones and for rehabilitation work in France and Belgium.

Coöperated with Food Administration in having public health nurses instructed in preparation of war-time food substitutes.

RE-EDUCATION AND REHABILITATION.

Presented to Secretary of War plan for formation of Reconstruction Board, including representatives of Army, Navy, Public Health Service, Red Cross, Council of National Defense, Hospitals and Laboratories, Medicine and Surgery, Vocational Education, Labor and Industry. Secretary of War instructed Surgeon-General to call conference and formulate plan. As a result bill was drafted providing for vocational rehabilitation and return to civil employment of soldiers and sailors disabled in line of duty.

RESEARCH.

Instituted investigation of conditions under which canned foods become deleterious.

Was instrumental in having University of Minnesota grow a supply of digitalis adequate for America's needs, to replace supply hitherto obtained from Germany.

Instituted tests of devices aimed to protect the ear from injuries by explosives.

Examined and card-indexed numerous antiseptics and disinfectants, furnishing all information to Medical Supply Department of the Army. Valuable cocaine substitutes and cheap disinfectants found usable. Silenced claims of venders of large number of absolutely worthless preparations.

Placed subject of shell shock in hands of Dr. George W. Crile for study.

Instrumental in bringing into use several substitutes for ambrine, for treatment of burns.

Instituted study which led to discovery that various preparations of thromboplastin help prolong period for coagulation of blood.

Investigated various devices for preparations for sterilizing wounds and germ carriers.

Instituted study of processes for sterilizing drinking water which led to authoritative statement that use of chlorine is best means, chlorine now being used under all conditions.

Instrumental in having prepared authoritative review of war literature bearing upon injuries of the peripheral nerves.

Abstracted all obtainable literature on methods of destroying lice, and instituted experimental research.

Instrumental in having published critical review of methods and results of vaccination for smallpox.

Obtained from a noted French authority statement of results obtained by French investigators as to value of Widal test after vaccination for typhoid fever.

STANDARDIZATION.

Held frequent conferences to study means by which production might be speeded, and demand for diverse types of appliances might be curtailed.

Conferences participated in by representatives of Army, Navy, Red Cross, Public Health Service, and manufacturers of surgical instruments and supplies. Result: Substantial increase in production of staple articles, standardization in types and issuance of four catalogues of staple medical and surgical instruments and supplies for use of Army, Navy and Red Cross.

STATES ACTIVITIES.

Obtained though State and County Committees names of physicians: (*a*) available for service in the Medical Reserve Corps, (*b*) those not available because of physical disability, over-age (55), or because of home community need.

Requested coöperation of medical profession in asking aid of Senators and Congressmen for legislation in reference to advanced rank for medical officers.

Made survey of medical schools, as a result of which arrangements were made for enlistment of medical students of well-recognized schools in enlisted Medical Reserve Corps and placing them on inactive list until completion of their medical education. Similar effort made in aid of pre-medical students.

Organized Volunteer Medical Service Corps for physicians ineligible to Medical Reserve Corps, because of physical disability, over-age, or essential home community need.

Prepared and mailed monthly to State and County Committees percentage tables of recommendations by Surgeon-General for commissions in Medical Reserve Corps.

Coöperated with Provost Marshal General's Office in selecting members of Medical Reserve Corps as medical aides to governors. Formulated outline of duties of medical aides.

Coöperated in having representatives sent to 44 states urging membership in Medical Reserve Corps.

Classified membership records of Medical Reserve Corps from code cards, a set being furnished for the Surgeon-General's Office in Washington and a set for the representative of the Surgeon-General with General Pershing's Army in France.

Made survey, through a sub-committee, of ophthalmologists of country, and requested those not needed for institutional and civic needs to join M.R.C.

Same committee standardized methods of eye examinations. Held conference on reeducation of blind soldiers, and conducted survey of workshops for the blind.

Made survey and classified, through a subcommittee, the otolaryngologists of country (brain, oral and plastic surgeons), requesting those available to join Medical Reserve Corps.

Recommended that specialists in head surgery be assigned to special duty in military hospitals; also that special hospitals be assigned for treatment of eye, ear, nose and throat cases; also recommended definite number of surgeons and assistants of each specialty, for chief hospitals and for each military division.

WOMEN PHYSICIANS.

Prepared index and complete data as to all women physicians in the United States.

Prepared lists of anesthetists, laboratory workers, radiographers, sanitarians, specialists, and industrial surgeons, willing to serve.

Compiled data regarding recent graduates of 35 co-educational medical colleges.

Secured registration of 1875 women physicians willing to serve—more than one-third of the total number in the United States.

THE GENERAL MEDICAL BOARD OF THE COUNCIL OF NATIONAL DEFENSE.

The Council of National Defense is composed of six members of the President's Cabinet—the Secretaries of War, Navy, Interior, Agriculture, Commerce and Labor. The Council nominated, and the President appointed an Advisory Commission of seven specially qualified persons, each having knowledge of one great field. Dr. Franklin H. Martin, as chairman of the Committee on Medicine and Sanitation of the Commission, organized the General Medical Board for the purpose of aiding in the enormous expansion of the various government bureaus and coördinating with their work the resources and talent of the civilian medical profession. Through this Board, which thus has its authority in the Advisory Commission and which represents the civilian population in its relation to the four government administrative offices of the Surgeons-General of the Army, Navy, Public Health Service and the Red Cross, "the organization for war of the medical profession," one of the set objects of the Council, is being carried out. This body originally consisted of 35 of the strongest medical men who could be selected. Ten of the original members have gone abroad on active service. The Board now has 77 members, including officers of principal surgical and medical societies, officers of the Army, Navy, and Public Health Service and a representative of the Red Cross, and 22 of these are on active duty in Washington. Recommendations are made to it, and medical questions referred to it for discussion. Such medical problems as develop from the activities of the committees of the Medical Section—the Board's operating body, of which Major F. F. Simpson is chief—are considered at the monthly meetings of the Board, usually held on Sunday, and referred, if deemed advisable, to the Monday morning meetings of the Executive Committee of ten, which includes the Surgeons-General of the Army, Navy and Public Health Service, the Chairman and Vice-Chairman of the Board, Lieutenant-Colonel Victor C. Vaughan, Lieutenant-Colonel William H. Welch, Major William J. Mayo, Rear-Admiral Cary T. Grayson, and Major William F. Snow, Secretary. If a recommendation of a committee is approved by the Executive Committee, it is laid before the Advisory Commission or the Council of National Defense, or both, by Dr. Martin, who is thus the link between the profession and the President's Cabinet. In this way there is official, executive action. If approved, the recommendations, for final working out, are referred back to the General Medical Board, or distributed in the way of information to those in authority in the bureaus concerned. The General Medical Board keeps in touch with all State and County Committees, and through them with all the sectional medical societies.

MEMBERS OF THE GENERAL MEDICAL BOARD.

On Active Duty in Washington.

Dr. Franklin Martin, Chicago, Illinois, Member of Advisory Commission, Council of National Defense, Chairman.
Dr. F. F. Simpson, Pittsburgh, Pennsylvania, Chief of Medical Section, Council of National Defense, Vice-Chairman.
Dr. W. F. Snow, New York City, Professor Public Health, Stanford University, Surgeon General's Office, Secretary.
Surgeon General William C. Gorgas, U. S. Army.
Surgeon General William C. Braisted, U. S. Navy.
Surgeon General Rupert Blue, U. S. Public Health Service.
Rear Admiral Cary T. Grayson, U. S. N., Washington, D. C.
Dr. William J. Mayo, Rochester, Minn.
Dr. Victor C. Vaughan, Dean of Medical Department, University of Michigan, Ann Arbor, Mich.
Dr. William H. Welch, Professor of Pathology, Johns Hopkins University, Baltimore, Md.
Dr. Elliot G. Brackett, Asst. Professor of Orthopedic Surgery, Harvard Medical School, Boston, Mass.
Dr. Philip Schuyler Doane, Chicago, Illinois.
Dr. Seale Harris, Secretary Southern Medical Association, Birmingham, Alabama.
Dr. Henry D. Jump, Asst. Physician, Philadelphia General Hospital, Philadelphia, Pa.
Dr. Allen B. Kanavel, Associate Professor of Surgery, Northwestern Univ. Medical School, Chicago, Ill.
Dr. W. H. G. Logan, President-elect, National Dental Association, Chicago, Illinois.
Dr. Charles H. Mayo, President, American Medical Association, Rochester, Minn.
Dr. John D. McLean, Member of Staff, Rush Hospital, Philadelphia, Pa.
Dr. James Bordley, Jr., Surgeon in charge, S. Balto. Eye Hosp., Baltimore, Md.
Professor Earle Phelps, Sanitary Engineer, Washington, D. C.
Dr. George E. deSchweinitz, Professor of Ophthalmology, University of Pennsylvania, Philadelphia, Pa.
Dr. Winford H. Smith, Superintendent, Johns Hopkins Hospital, Baltimore, Md.
Dr. Hubert Work, Pueblo, Colorado, Chairman, House of Delegates, American Medical Association.

ON ACTIVE DUTY ABROAD.

Dr. Frederic A. Besley, Professor of Surgery, Northwestern University, Chicago, Illinois.
Dr. George E. Brewer, Professor of Surgery, Columbia University, New York City.
Dr. George W. Crile, Professor of Surgery, Western Reserve University, Cleveland, Ohio.
Dr. John M. T. Finney, Professor of Clinical Surgery, Johns Hopkins University, Baltimore, Md.
Dr. Joseph M. Flint, Professor of Surgery, Yale University, New Haven, Conn.
Dr. Joel E. Goldthwait, Lecturer on Orthopedics, Harvard Medical School, Boston, Mass.
Dr. Charles H. Peck, Professor of Surgery, Columbia University, New York City.
Dr. Richard P. Strong, Professor of Tropical Medicine, Harvard University, Boston, Mass.
Dr. William S. Thayer, President, Congress of American Physicians and Surgeons, Baltimore, Md.
Dr. George Walker, Associate in Surgery, Johns Hopkins University, Baltimore, Md.

ON ACTIVE DUTY IN CAMPS OR OTHER SERVICES IN THIS COUNTRY.

Dr. John Fairbairn Binnie, Recorder, American Surgical Association, Kansas City, Mo.
Dr. Joseph C. Bloodgood, Associate Professor of Surgery, Johns Hopkins University, Baltimore, Md.
Dr. John Young Brown, Professor of Surgery, University of St. Louis, St. Louis, Mo.
Dr. Joseph Rilus Eastman, President, Western Surgical Association, Indianapolis, Ind.
Dr. William D. Haggard, Professor of Surgery, Vanderbilt University, Nashville, Tenn.
Dr. Fred Bates Lund, Lecturer on Surgery, Harvard Medical School, Boston, Mass.
Dr. Edward Martin, Professor of Surgery, University of Pennsylvania, Philadelphia, Pa.
Dr. Stuart McGuire, Professor of Surgery, Medical College of Virginia, Richmond, Va.
Dr. Albert J. Ochsner, Professor of Surgery, University of Illinois, Chicago, Illinois.

OTHER MEMBERS.

Dr. Thomas W. Huntington, Professor of Surgery, University of California, San Francisco, Cal.
Dr. Alexander C. Craig, Secretary, American Medical Association, Chicago, Illinois.
Dr. John B. Deaver, Professor of Practice of Surgery, University of Pennsylvania, Philadelphia, Pa.
Dr. Simon Flexner, Director, Rockefeller Institute for Medical Research, New York City.
Dr. Hobart Amory Hare, Professor of Therapeutics, Materia Medica and Diagnosis, Jefferson Medical College, Philadelphia, Pa.
Dr. C. Jeff Miller, Professor of Obstetrics and Clinical Gynecology, Tulane University, New Orleans, La.
Dr. Hubert A. Royster, Secretary, Southern Surgical Association, Raleigh, N. C.
Dr. George H. Simmons, Editor *Journal of American Medical Association*, Chicago, Illinois.
Dr. J. Bentley Squier, Professor of Urology and Genito-Urinary Surgery, College of Physicians and Surgeons, Columbia University, New York City.
Dr. Herman M. Biggs, State Commissioner of Health, New York City.
Dr. Alexis Carrel, Member of Staff, Rockefeller Institute, New York City.
Dr. John G. Clark, Professor of Gynecology, University of Pennsylvania, Philadelphia, Pa.
Dr. Frederic J. Cotton, Associate in Surgery, Harvard Medical School, Boston, Mass.
Dr. Thomas S. Cullen, Vice-President, Southern Surgical and Gynecological Assn., Baltimore, Md.
Dr. Edward P. Davis, Professor of Obstetrics, Jefferson Medical College, Philadelphia, Pa.
Dr. Robert L. Dickinson, First Vice-President, American Gynecological Society, Brooklyn, N. Y.
Dr. William A. Evans, President, American Public Health Association, Chicago, Illinois.
Dr. Duncan Eve, Sr. President, Southern Medical Association, Nashville, Tenn.
Dr. S. S. Goldwater, Superintendent, Mt. Sinai Hospital, New York City.
Dr. S. McC. Hamill, Professor of Pediatrics, University of Pennsylvania, Philadelphia, Pa.
Dr. Malcolm L. Harris, Secretary, Board of Trustees, American Medical Association, Chicago, Ill.
Dr. Jabez Jackson, Kansas City, Mo.
Dr. Charles E. Kahlke, Professor of Surgery, Hahnemann Medical College, Chicago, Ill.
Dr. John H. Landis, Health Commissioner, Cincinnati, Ohio.
Dr. John A. Lichty, Professor of Medicine, University of Pittsburgh, Pittsburgh, Pa.
Dr. Rosalie Slaughter Morton, Chairman, American Women's Hospitals, New York City.
Miss M. Adelaide Nutting, Professor of Nursing and Health, Teachers' College, Columbia University, New York City.
Dr. Charles B. Penrose, Professor of Gynecology, University of Pennsylvania, Philadelphia, Pa.
Dr. Emmet Rixford, Professor of Surgery, Stanford University Medical School, San Francisco, Cal.
Dr. Sterling Ruffin, Professor of Medicine, George Washington University, Washington, D. C.
Dr. George David Stewart, Professor of Surgery, University Bellevue Hospital Medical College, New York City.
Dr. William B. Van Lennep, Professor of Surgery, Hahnemann Medical College, Philadelphia, Pa.
Dr. Florence N. Ward, Chief Surgeon, Florence N. Ward Sanatorium, San Francisco, California.
Dr. Ray L. Wilbur, President, Stanford University, San Francisco, California.
Dr. W. C. Woodward, Health Officer of the District of Columbia, Washington, D. C.
Dr. Katharine B. Davis, Executive Secretary, Bureau of Social Hygiene, Rockefeller Foundation, New York City.

HONORARY MEMBERS.

Colonel C. U. Dercle, Medical Department, French Army, Paris, France.
Colonel T. H. Goodwin, Surgeon General, R. A. M. C., London, England.
Mr. Julius Rosenwald, Member of Advisory Commission, Council of National Defense, Chicago, Ill.
Colonel Claude K. Morgan, British Army Medical Service, London, England.

THE COMMITTEES OF THE GENERAL MEDICAL BOARD OF THE COUNCIL OF NATIONAL DEFENSE ARE:

Executive Committee.

(The Central Governing Board has in charge the organization of the Volunteer Medical Service Corps, and is made up of members of the Executive Committee.)

Child Welfare.

Civilian Coöperation in Combating Venereal Diseases.

Dentistry.

(With sub-committees on Dental and Oral Surgery, Dental Legislation and Enrollment, Dental Publicity, Dental Research, Examining Boards, Mobilizing Dental Educational Activities, Preparedness League of American Dentists, Special Hospitals, Standardization of Dental Equipment and State Dental Societies.)

Editorial.

General Surgery.

(With sub-committees on Classification of Surgeons, Head Surgery, Ophthalmology, Otology, Laryngology and Rhinology.)

Hospitals.

Hygiene and Sanitation.

(With sub-committees on Alcohol, Drug Addiction, Public Health Nursing, Statistics, Tuberculosis, and Venereal Diseases.)

Industrial Medicine and Surgery.

Legislation.

Medical Advisory Board.

Medical Schools.

Nursing.

Publicity.

Research.

State Activities and Examinations.

Volunteer Medical Service Corps.

Women Physicians.

HOSPITAL NEEDS URGENT.

The following letter written by Dr. W. A. Brooks, acting surgeon-general of Massachusetts, setting forth the present need of hospital facilities has been forwarded to Surgeon-General Gorgas:

"With 100,000 going into action, and thousands more to follow, it is beyond comprehension that this country is not more alive to the fact that within a few weeks thousands of wounded may be coming home to be cared for.

I am informed that the intention of the Army Medical Corps is to send home only the wrecks, and to take care of the less severely wounded on the other side. No doubt the authorities in Washington think they see their way clearly to care for all the wounded in France, but to a man who has spent all of his life in hospitals, the thought occurs that perhaps such plans may have to be changed, and if they are changed, then truly the hospitals of New York, Boston and Baltimore will be proven to be utterly inadequate to handle the situation. They are not constructed on a large enough scale. We read that about 30 or 40% of 100,000 men means 30,000 wounded. It has been estimated that in the entire United States there are only about 150,000 hospital beds, and these are filled the greater part of the time. Massachusetts has a normal capacity of about 6000 beds. In an emergency about 3500 more can be furnished, and these are scattered all over the State.

The 6000 beds are practically full now. There are available, therefore, only about 3500 beds. A few good-sized shiploads of wounded and the available supply of beds will be exhausted. Within 12 months we may have over 1,000,000 men at the front. If so, taking the minimum number of normal casualties and adding 10% for those who are taken ill, and we will have a minimum of 300,000 or 400,000 men to be cared for. France and England are today overburdened with their own sick and wounded. Is it within reason that we can borrow hospital beds from them?

Another point. The three or four hundred thousand sick and wounded have to be fed. Is it a feasible plan to keep our wounded over there with cargo supply so limited? Does it stretch the imagination much to imagine the difficulties in keeping our fighting troops well supplied, and at the same time feed and care for three or four hundred thousand in the hospitals? The more sick and wounded who have to be cared for on the other side, the more difficult becomes the task of properly looking out for the fighting force. Our transports take our troops over. Are they coming back empty?

The objection has been raised that if the wounded are brought home, military authorities would never be able to get them back on the fighting line. Granted that this may be true (I for one do not think it is), there should be other trained men to take their places if the Army is going to be built on the scale it should be.

Assuming for the moment that only 10% of all the sick and wounded are brought back, how are the 30,000 or 40,000 going to be cared for? This country is now talking in billions. Not many months ago we were talking in millions, and not long before that we were talking in hundred thousands. Our hospitals are still in the hundred thousand class when they should, in order to keep up with the times, be in the billion. Hospitals of 2000 beds should be the rule, and not the exception, if we are to deal properly with the problems which must soon be met. Is America to fail to look after its sick and wounded? It surely will unless something is done and done quickly.

All the talk about putting wounded in private homes is all rubbish. It can be done, but who is going to look after them? In the city of Boston today every hospital is filled, and every hospital is short of skilled surgeons and physicians. Where are the doctors coming from to go from house to house?

It is only by concentrating the work, that there will possibly be found enough physicians and surgeons to care for the wounded properly. There ought to be under construction today near Boston a hospital with at least 2000 beds. It is not practical to think that any old building can be taken and converted into a hospital. Old buildings are not sanitary. Epidemics would sweep through them. They are not supplied with proper plumbing. They are built up in the air and would be dangerous in case of fire.

The situation as it exists today demands immediate action, and I wish to go on record before the Public Safety Committee of Massachusetts as having stated the situation as it is, and as having stated the prospects of its soon becoming critical. I wish to go on record in regard to recommendations as to what in my opinion, should be done immediately."

Correspondence.

COMPULSORY ANTITYPHOID INOCULATION.

The following letter has been sent by Dr. Keen to the Secretary of War:

1729 Chestnut St., Philadelphia,
April 30, 1918.

Hon. Newton D. Baker, *Secretary of War*,
War Department, Washington, D. C.

My dear Mr. Secretary:—

In a four-page pamphlet entitled "Why is My Soldier Sick?" issued by the National Antivivisection Federation, Incorporated, with headquarters at 456 Fourth Avenue, New York City, are published two resolutions passed by the New York Antivivisection Society at its annual meeting, January 31, 1918, and forwarded to you officially. The second resolution reads as follows:

> "BE IT FURTHER RESOLVED: That a copy of the foregoing resolution be forwarded to the Secretary of War as our official protest against the medical department's claim that serum inoculation is a necessary war measure and for that reason made compulsory, and as our protest against compulsory inoculation when the individual soldier conscientiously objects thereto; and *we point to the provision of exemption now made by Great Britain, that power having been forced to rescind the rule of compulsion after the alarming effects of inoculation were disclosed.*" *

It has long been a matter of common knowledge and deeply regretted by the medical profession that Great Britain has never made antityphoid vaccination compulsory, as it fortunately is in our own army.

In an article entitled "The Red Cross and the Antivivisectionists," a copy of which I am enclosing, I have shown by irrefutable facts how extraordinary the protection of the antityphoid vaccination has been in our army and in the British army.

Although I knew that the statement in this Resolution was an absolute falsehood, I preferred to have an authority which was beyond all question. Accordingly, on Saturday, April 27, I sent the following cable to Surgeon General Goodwin, who occupies the same post in Great Britain that General Gorgas does in this country:

> "*Surgeon General Goodwin,*
> *War Office, London.*
> Has antityphoid vaccination ever been compulsory in British army? Keen."

To this, on Monday, April 29, I have received the following reply:

> "London.
> "*Prof. Keen, Philadelphia.*
> "Antityphoid inoculation has never been compulsory in British army. Goodwin."

You will observe, therefore, that this is a flat contradiction of the false assertion of the New York Antivivisection Society.

Nearly all of the British army has been voluntarily vaccinated against typhoid fever. Col. F. F. Russell, in Surgeon General Gorgas' office, authorizes me to say that he understands that 99% of the British soldiers are vaccinated against typhoid fever. The reason for this is that they have seen how extraordinarily complete is the protection offered by the antityphoid inoculation. At this time the fate of the war depends largely on the health of our army. It is, in my opinion, equivalent to disloyalty to deprive our soldiers of this protection and sacrifice their lives instead of the lives of a few rabbits, guinea-pigs, cats and dogs.

Yours very respectfully,

W. W. Keen.

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* Italics my own.

SOCIETY NOTICE.

New England Pediatric Society.—There will be a special meeting of the New England Pediatric Society at the Boston Medical Library, on Friday, May 24, 1918, at 8.15 p.m.

Dr. William Palmer Lucas, M.D., of San Francisco, Cal., Director of the Children's Bureau, Department of Civil Affairs, American Red Cross, will describe the work now being done for children in France. All physicians are invited to attend.

Light refreshments will be served after the meeting.

Charles Hunter Dunn, M.D., *President*,
Richard H. Smith, M.D., *Secretary*.

NOTICE.

Pilots Wanted for Naval Aviation Service.—The aviation branch of the Naval Reserve Force has again opened. Young men between the ages of 20 and 25, who have two or three years college training, or its equivalent, will be accepted as applicants, provided they have a good knowledge of higher mathematics, trigonometry being absolutely essential.

These men will be given the provisional rating of chief quartermaster while under training for their commissions. The pay for chief quartermaster is $61.00 per month.

Only American citizens will be accepted. Men desiring to enroll in this branch should send a personal letter to Lieutenant J. K. Park, Jr., Room 1225, Little Building, Boston, Mass., who will mail applications and full information. No personal interviews will be given.

Men whose applications have been favorably considered will be ordered to active duty at once and receive their training at the Massachusetts Institute of Technology, Cambridge, Mass.

RECENT DEATH.

Dr. D. Fletcher Ingals, lecturer at the University of Chicago and a writer on medical topics, died in Chicago, as a result of angina pectoris. Dr. Ingals was an accepted authority on this disease, and in a recent issue of the *Journal of the American Medical Association*, he contributed an article describing his own experiences as a patient.

The Boston Medical and Surgical Journal

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Address.

THE RELATION OF THE DOCTOR TO WORKMEN'S COMPENSATION.*

BY FRANCIS D. DONOGHUE, M.D., BOSTON,

Medical Adviser of the Massachusetts Industrial Accident Board.

IN the beginning, I would like to ask how many members of this Society have read the Workmen's Compensation Act? Because I believe that a large part of the misunderstandings that occur are due to the fact that the doctors, as a rule, so busily engaged in their own affairs, have not taken time to find out just what their relations to the Workmen's Compensation Act really are.

Beginning on May 23, 1917, the employee was given "the right to select a physician other than the one provided by the Association, and in case he shall be treated by a physician of his own selection, or whether in case of emergency or for other justifiable cause, a physician other than the one provided by the Association is called in to treat the injured employee, the reasonable cost of his services shall be paid by the Association, subject to the approval of the Industrial Accident Board. Such approval shall be granted only if the Board finds that the employee was so treated by such physician, or that there was such emergency or justifiable cause and, in all cases, that the services were adequate and reasonable and the charges reasonable."

In asking for a change in the law, it was alleged that the man should have a right to choose his physician, and, on the other hand, it was alleged that some of the treatment provided by the insuring companies was not adequate.

The Legislature, having given this right to the injured man to choose his own doctor, at the request of the physician rather than at the request of the injured man, it behooves the physician to give the best treatment that can be given, at a reasonable cost. The measure of their success will be found in the restoration of the injured employee to work under the new system as compared with the old, and the measure of insurance costs as assessed upon the employers of labor represented by insurance premiums.

To have the free choice of physicians continued indefinitely, it is perfectly apparent that the cost must not be excessive and the results must be good.

Now, all doctors are not well qualified to care for industrial accidents, and they should carefully consider in every case their relation to the case and their relation to their fellow practitioners, because a few cases improperly and inadequately diagnosed, that lead to long periods of disability and to the resulting loss in wages to the man and the resulting costs to the insurance funds, tend to offset the good that comes in the great majority of cases which the average man is competent to treat. Early consultations, when in doubt, in conjunction with the insurance companies, may obviate this danger.

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* Read before the Norfolk South District Medical Society, March 7, 1918.

UNUSUAL TREATMENT.

The law does not give full medical treatment. The law reads as follows:

"During the first two weeks after the injury, if the employee is not immediately incapacitated thereby from earning full wages, then from the time of such incapacity, and in unusual cases, in the discretion of the Board, for a longer period, the Association shall furnish adequate and reasonable medical and hospital services, and medicines, when they are needed."

In asking for this law the Board made use of the following phrase:

"The Industrial Accident Board requests that the Legislature give the Board the power to require the payment of bills for medical and surgical treatment, medicine, medical and surgical supplies, crutches and apparatus when necessary, beyond the first two weeks after the injury, in unusual cases where the injury is so serious as to require and warrant such additional medical treatment."

In a general way, the Board has interpreted this section to mean: in unusually serious cases that require treatment in a hospital, in unusually serious cases where the compensation was not sufficient to care for the injured workman and for his family or his dependents if he had them, and in a third group of cases, in cases where special or unusual treatment might materially reduce the period of disability and materially minimize the consequences of the injury; in other words, where treatment would tend to restore the wage-earning capacity of a case which otherwise might have a tremendously long period of loss.

The Industrial Accident Board has been inclined to be liberal in its interpretation of the section with reference to medical treatment in "unusual" cases. The Supreme Judicial Court, as shown by their decision in Huxen's Case, 226 Mass. 292, has given a rather restricted interpretation to the word "unusual." Huxen, the employee, was injured by being burned with live steam, the burns being extensive and serious. After receiving treatment at his home during the first two weeks, the employee was given further treatment at the office of the doctor, in Boston. The employee's home was in Cambridge. The bill of the physician, at the usual rate for office calls, was approved by the Board, and the insurer appealed to the Supreme Judicial Court.

The Court said, in part: It is manifest that the Legislature did not intend to impose all expenses of medical attendance upon the insurer. The obligation to provide such attendance as an absolute duty is confined to the first two weeks after the injury. It is manifest that in the aggregate there must be many cases where medical attendance may be required for a longer period. It is not in an ordinary case requiring longer medical attendance that the discretion of the Board may be exercised to charge this attendance to the expense of the insurer. It is only in "unusual cases" that they may do so. There would be grave doubt whether a case where the employee is able to go from his home in Cambridge to an office in Boston could be so unusual as to be within the purview of the Act.

Then comes the significant part of the Court's decision: "But there is a further circumstance in the case at bar which renders it impossible to say, as matter of law, that the finding of the Board was unwarranted." The Court refers to the letter of the insurer offering to furnish "first-class treatment free of charge," or if the employee wished to continue with Dr. Morse (his own physician) "we will allow him $1 an office visit." The Court then says: "The offer to pay $1 per visit to Dr. Morse, or to provide its own physician free of charge, may have been found to be an *admission* that under the act the insurer was bound to furnish medical attendance, and hence that it was an 'unusual' case. As the finding of the Board must stand if there is any evidence on which it might reasonably have been founded, it cannot be pronounced unwarranted." And the Court modified the decision of the Board by allowing Dr. Morse a sum equivalent to $1 per office visit.

It would have been helpful to the Board had the Court stated the law more clearly as to the meaning of the word "unusual," particularly with reference to the point as to whether a case which may be regarded as "unusual" during the time the employee is confined to his home, may, thereafter, because he is able to journey to the doctor's office, become "usual" and relieve the insurer of further liability under the Act.

It seems to me that the intent of the compensation law is just as much to cure injured people as it is to determine their legal rights to compensation.

There are certain obligations which the doctor owes to the act, and by the act I mean to his patient, and the first of these obligations is to keep an adequate record, from which cause and effect may be deduced if the case comes to a hearing; and the second is to respond to calls for his presence before the Accident Board or any of its members when a case which he has treated is under discussion, because it may be that he is the only person that can give the facts in the form of adequate evidence on which the injured man may get his rights; and again, if the injured man, through the failure to present adequate medical evidence, loses his rights, the doctor also loses his rights as to the collection of his bill for the services rendered.

While the Industrial Accident Board goes a long way in protecting the rights of the injured, there is an obligation upon all parties conversant with an accident to see that the steps prescribed by law are followed, or a person, by reason of the fact that rights are derived from the law, loses his legal rights; and the first place where a man's rights need preservation is in the filing of a notice of an accident.

Notice of injury, Sections 15, 16, 17 and 18, reads as follows:

"Section 15. No proceedings for compensation for an injury under this act shall be maintained unless a notice of the injury shall have been given to the Association or subscriber as soon as practicable after the happening thereof, and unless the claim for compensation with respect to such injury shall have been made within six months after the occurrence of the same; or, in case of the death of the employee, or in the event of his physical or mental incapacity, within six months after death or the removal of such physical or mental incapacity.

Section 16 (as amended by Chapter 172, Acts of 1912, and Section 3 of Chapter 571, Acts of 1912). The said notice shall be in writing, and shall state in ordinary language the time, place and cause of the injury, and shall be signed by the person injured, or by a person in his behalf, or, in the event of his death, by his legal representative or by a person in his behalf, or by a person to whom payments may be due under this act or by a person in his behalf. Any form of written communication signed by any person who may give the notice as above provided, which contains the information that the person has been so injured, giving the time, place and cause of the injury, shall be considered a sufficient notice.

Section 17. The notice shall be served upon the Association, or an officer or agent thereof, or upon the subscriber, or upon one subscriber, if there are more subscribers than one, or upon any officer or agent of a corporation if the subscriber is a corporation, by delivering the same to the person on whom it is to be served, or leaving it at his residence or place of business, or by sending it by registered mail addressed to the person or corporation on whom it is to be served, at his last-known residence or place of business.

Section 18. A notice given under the provisions of this act shall not be held invalid or insufficient by reason of any inaccuracy in stating the time, place or cause of the injury, unless it is shown that it was the intention to mislead, and the Association was, in fact, misled thereby. Want of notice shall not be a bar to proceedings under this act if it be shown that the Association, subscriber, or agent had knowledge of the injury."

Many men leave their employment and are disabled without giving adequate notice, and it is not sufficient that the doctor assume that notice has been given in a serious case, but he should see to it that notice is given by filing such notice himself, in the name of and with the assent of the employee, with the employer, or insurer, sending a copy to the Industrial Accident Board. This will protect the injured man's rights and protect the rights of the doctor.

In addition to notice, there must be a claim filed. Section 23, Part II, of the act regarding claim for compensation, reads as follows:

"The claim for compensation shall be in writing and shall state the time, place, cause and nature of the injury; it shall be signed by the person injured or by a person in his behalf, or, in the event of his death, by his legal representative or by a person in his behalf, or by a person to whom payments may be due under the act or by a person in his behalf, and shall be filed with the Industrial Accident Board. The failure to make a claim within the period prescribed by Section 15 shall not be a bar to the maintenance of proceedings under this act if it is found that it was occasioned by mistake or other reasonable cause."

In this also, the doctor must exercise a reasonable interest.

There is another kind of claim other than the one I have called to your attention, and that is the claim for specific compensation under the Workmen's Compensation Act. It is a specific compensation for the loss or loss of use of a hand, phalange, finger, eye, leg, foot, toe, etc.; and a recent case passed upon by the Supreme Court, the Thomas Levangie case, containing a lot of things in the nature of advice, points out many things which medical men should carefully consider.

The first thing is for the doctor to tell the truth to the patient or someone representing him, that his rights may be protected.

In the Levangie case, the man fell from a staging, a distance of about fourteen feet, and received a fracture of the spine; not a typical fracture of the spine, but a typical fracture of the spine where there has been a crush of the cord. The evidence in this case shows that from the time of the injury the employee was practically bedridden and has been incapacitated for work which required the movement of the legs, but "aside from the complete paralysis of the legs (and sphincters) he is in excellent health. At the hearing before the committee, in answer to the question, 'You knew your back was broken?' the employee testified, 'I know now. I knew my back was fractured, but people time and again come to my bed and told me that people were the way I was and come through all right so I lived in that hope.' He further testified: 'I never expected to use them as before I injured them'; 'I always had hopes they would come around all right,' and thought as late as June 16, 1916, 'I would get on crutches, and finally get better so I could walk around a little bit.' To the question, 'That was your hope?' he answered, 'Yes.' "

The bearing of this is found in a later part of the decision, when the insurance company refused to pay for the specific compensation for the loss of the legs. "The failure of the employee to file a claim for compensation with the Industrial Accident Board before Oct. 30, 1916, was not due to physical or mental incapacity, or the result of ignorance of the right to additional compensation under St. 1911, C. 751, Part II, Sec. 11, and acts in amendment thereof, nor was there a mistake of fact as to the time of the injury or as to its nature, degree or probable permanency or other 'justifiable cause,' within the meaning of St. 1911, C. 751, Part II, Sec. 23, as amended by St. 1912, C. 571, Sec. 5, for the failure to make a claim within the period prescribed by Section 15. McLean's Case, 223 Mass. 342; Gorski's Case, 116 N. E. 811. Moreover, the claim filed with the Industrial Accident Board Oct. 30, 1916, was not presented to that Board within a reasonable time after Oct. 2, 1916, the day when the employee first learned definitely that his legs were rendered permanently incapable of use. Carroll's case, 225 Mass. 203."

In this case, by reason of the failure to file a claim within twenty-eight days, the man lost his rights on this and other grounds, to specific compensation for a period of fifty weeks at $10 a week.

The Workmen's Compensation Act is such a big subject, even treating it solely from a medical standpoint, that it has been possible to touch upon only a few of the more important matters of interest to physicians.

A final word, touching on the war. Everywhere we are confronted with the sign, "Don't waste it." This command refers to food. Of far greater importance is man power. Don't waste it. Save it. Try and save at least one working day for every man treated by you; more than one day, if possible. Such saving means an extra day for the man, one more day's production for his employment, and, above all, an added day for our country.

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EAST BOSTON MEDICAL SOCIETY.—Dr. L. G. Lowrey, chief medical officer of the Psychopathic Hospital, will speak before the East Boston Medical Society on Friday evening, May 24, at 8.15 P.M. Subject: "The Clinical Manifestations of Mental Disease." Those interested in the subject are invited to visit Walcott's Hall, Central Square, East Boston, on that night.

J. DANFORTH TAYLOR, *Secretary.*

Original Articles.

THE APPLICATION OF ANAPHYLACTIC SKIN TESTS TO GENERAL MEDICINE.*

By Samuel Ayres, Jr., Boston,

Harvard Medical School.

The purpose of this discussion is to call attention to the broader possibilities of diagnosis and treatment on the basis of information obtained by the so-called anaphylactic skin reactions. Nearly everyone is familiar with the brilliant progress recently made possible by this method in the control of hay-fever and asthma. Few people, however, have gone beyond this; in fact, when one speaks of the anaphylactic skin tests, these two conditions are usually thought of. Some investigators have endeavored to apply the reactions to other disorders of an anaphylactic nature, and are invading the fields of general medicine. The work is entirely new, the literature scant, and adequate data for measuring the success of the venture are as yet unavailable. The aim in presenting this subject, therefore, is not so much to offer statistics as to arouse interest in the possibilities at hand, which may lead, perhaps, to further investigation and the tabulation of more data. Progress in this field will not be made in the laboratory, but in every-day clinical practice and in proportion as the practitioner becomes interested. The technic is extremely simple, requiring neither elaborate apparatus nor profound skill.

But, first, let us understand what we mean by anaphylaxis, for that is the underlying principle of the disorder, the diagnosis and the treatment of which we are to consider. I do not intend to bore you with a long discussion of this matter, which is, doubtless, more or less familiar. I mean to sketch only a brief outline, which I have summarized from a lecture by Dr. Robert A. Cooke of New York in the *Medical Clinics of North America* for November, 1917.[1] I can do this best in the form of a table. Our animal is a guinea pig, and the foreign protein which we shall inject is horse serum. Each Roman numeral represents a different guinea pig.

Animal	First Procedure	Second Procedure	Result	Antibodies	Condition
I.	Serum injected		No symptoms	Absent	Non-sensitive
II.	Serum injected	Next day, serum injected	No symptoms	Very few attached to cells	Non-sensitive
III.	Serum injected	After 10 to 14 days serum injected	Anaphylactic shock and death	Many and attached to cells	Sensitive
IV.	Serum injected	After 10 days a sub-lethal injection. Symptoms but not death. On 11th day large dose	No symptoms	Excess free	Desensitized
V.	Serum injected	Injections on 10 consecutive days. No symptoms. On 11th day a large dose.	No symptoms	Excess free	Immune

The theory which most plausibly accounts for the above results is as follows: A foreign protein (in this case, horse serum) is not in itself toxic. When such a foreign protein gains entrance to the circulation of an animal for the first time, it stimulates the production of specific antibodies which previously did not exist. These antibodies, which may or may not be enzymes, are produced by certain cells of the body and seem to be intimately associated with the cells which produced them. If time enough is allowed for a sufficient number of antibodies to accumulate, and a second dose of the same protein is introduced, the antibodies react with the protein, splitting it into toxic fragments, which in turn injure the body cells and give rise to anaphylactic symptoms. If, on the other hand, an excess of antibodies has been produced and are free in the blood stream they combine with the foreign protein and prevent it from reacting with the body cells, just as antitoxin neutralizes toxin. In other words, when antibodies are absent or few in number, we have the non-sensitive state; when numerous and attached to body cells, we have the sensitive or anaphylactic state; and when in excess with many unattached to body cells, we have the immune state. Anaphylaxis and immunity are the same in principle, differing only quantitatively.

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* Read before the Boylston Medical Society, March 22, 1918.

As noted in animal No. V on the chart, small injections on consecutive days do not give rise to symptoms, but carefully controlled experiments[2] have shown that such a procedure, continued over a long period of time, leads to very definite pathological changes in the arterial walls of most of the organs. This work will be referred to later in speaking of arteriosclerosis.

Of course, clinically, the typical picture of anaphylactic shock with respiratory failure and death is, fortunately, a rare occurrence, and happens only when an animal serum, usually containing an antitoxin, is injected into a person who is sensitive to that particular animal. But all degrees of the milder grades of anaphylaxis are met with in everyday practice, and are often unrecognized.

As stated above, the antibodies produced by the sensitizing protein or antigen tend to attach themselves to, or develop in the cells of different tissues. Clinical manifestations vary according to the tissue or group of tissues sensitized. If the smooth muscle cells of the bronchi and the mucous membrane of the respiratory tract are sensitized, we have asthma from a narrowing of the bronchioles, due to contraction of the smooth muscle and edema of the mucosa. If the mucous membranes of the eyes, nose and throat are sensitized, anaphylaxis is manifested as hay-fever; if it is the epithelium of the skin, we have urticaria or eczema; if it is the connective tissue, we have angioneurotic edema; if the intestinal mucosa and smooth muscle, we have gastro-enteritis from edema and spasm. The involvement of joint surfaces results in arthralgia; that of renal elements in pseudo-nephritis.[3]

We do not have to indulge in guesswork to attribute these symptoms to anaphylaxis; we have only to observe a patient with diphtheria who has received injections of antitoxin, the offending protein, of course, being the horse serum. After a few days of incubation the symptoms begin (presumably when the antibodies have reached a sufficient concentration). The reaction is manifested by a transient rise in temperature, pulse and respiration, by cutaneous outbreaks such as urticaria and erythema multiforme, pains in the joints, gastro-intestinal disorders, respiratory symptoms, a transient acute nephritis, etc. The picture is a familiar one.

Then, again, we have the everyday symptom-complex of the person who has been poisoned by a definitely recognized article of food, such as strawberries, lobster, shrimp, or salmon. The manifestations are in no wise different from those of the diphtheria patient who has received horse serum. In the first instance, we expect a reaction, and we do nothing about it except to make the patient comfortable; in the second case we recognize a definite etiology to account for the symptoms, and we advise the patient to omit that article from his diet.

But what of the patient who seeks treatment for urticaria or asthma, or acute indigestion, or non-rheumatic arthralgia, or chronic and persistent constipation,—any of these symptoms alone or in combination,—who can incriminate no definite part of his diet? These symptoms, again, are like those produced by horse serum or strawberry poisoning, even though the etiological factor is obscure. Of course they may have been produced in an entirely different way,—no one would deny that,—but there is at least an even chance that they are purely an anaphylactic manifestation. Surely we should be able to recognize old friends; and, in fact, we have progressed so far that we single out the respiratory symptoms, such as hay-fever and asthma, and treat them accordingly. By means of the cutaneous anaphylactic reactions, we test out various proteins, including horse hair, horse dandruff, pollens, bacteria, and food proteins, etc., and we note those to which the patient reacts. The food proteins we eliminate from the diet; we get rid of offending bacterial proteins by attempting to clean up foci of infection, such as bad teeth or tonsils, and we desensitize the patient against pollens and horse-hair proteins by the principle of small injections, as shown in chart under IV.

This is a thoroughly scientific method of procedure, but why use it only in respiratory anaphylactic symptoms, to the exclusion of all others? Why not employ it in cutaneous or gastro-intestinal disorders if we can rule out other causes for the disturbance? It is to be remembered that anaphylaxis shows itself according to the tissues which are sensitized.

Dr. Henry A. Christian of the Peter Bent Brigham Hospital has recently published a series of ten cases[3] which he groups together under a definite clinical entity, the pathology of which consists in transitory focal lesions of the small blood vessels and capillaries, causing dilatation, diapedesis, or exudation, either singly or in combination. The areas of vascular involvement may be either in the cutaneous, mucous, or serous surfaces, subcutaneous tissues, muscles, or viscera, hence the variety and complexity of symptoms. The skin lesions may manifest themselves as purpura, erythema, urticaria, angioneurotic edema, and the visceral lesions as arthritis, gastro-intestinal symptoms, hematuria and various disturbances of renal function. Since the visceral lesions may occur without concomitant skin lesions, the difficulties in diagnosis are apparent. Dr. Christian does not offer any explanation to account for this clinical picture, but he points out the similarity between the joint symptoms and the arthralgia of serum sickness. The almost obvious anaphylactic nature of this condition is well illustrated in Case No. 9.

The patient, a man, aged 58, had had a large number of attacks of localized swelling in the right hand, and other manifestations of urticaria. The day before coming to the hospital, he was in his usual health until the afternoon. While having tea his abdomen became distended, there was some belching of gas, he felt rather uncomfortable and went to bed. He slept poorly that night, due to pain in epigastrium and the discomfort from distention. The next morning when he came to the hospital, his abdomen was found still to be distended and diffusely painful and slightly tender, suggesting distinctly intestinal obstruction. For twenty-four hours very little result was obtained from enemas or rectal tube. Then a good fecal result was obtained and the patient passed a considerable amount of gas. Forty-eight hours after admission, his abdomen was much less distended and the patient was more comfortable. Four days after admission, scattered patches of erythema and edema appeared over his hands, arms and feet which, he said, were similar to those that he had repeatedly had after eating fish, shellfish or canned goods that were, possibly, not quite good. He recalled having eaten sardines on the day that his abdomen became distended and the discomfort developed. These findings suggested that possibly the intestinal obstruction was due to a similar type of lesion (*i.e.*, an edema) in the intestinal wall. A bismuth roentgen ray study of the gastro-intestinal tract, made the following day, confirmed this hypothesis. Five hours after taking the bismuth meal, a sausage-shaped dilation with a narrow outlet was seen in one of the upper loops of the ileum. Three days later, all symptoms had disappeared, and two subsequent roentgen ray examinations revealed no evidence of the obstruction.

Dr. I. C. Walker employed the anaphylactic skin tests, using a large number of proteins, including sardines, but without getting any positive reactions.

Another case might be cited from Cooke's lecture already mentioned.[1]

A man, aged 36, asthmatic since the age of 4, came to the hospital, complaining, in addition to his bronchial symptoms, of chronic constipation and gastric indigestion with flatulence, pyrosis and eructations. By means of the cutaneous protein reactions, he was found sensitive to horse hair, ragweed, and a long list of food proteins. With the elimination of these particular foods from his dietary, all enteric symptoms ceased. He was treated for his bronchial symptoms by subcutaneous desensitizing doses of horse and pollen proteins.

Cooke points out that the presence of a positive cutaneous reaction does not necessarily mean that that particular protein when ingested will always cause symptoms, but that the results of treatment based on this line of study yield more satisfactory results than were previously obtained. He finds that treatment to relieve food anaphylaxis is unsatisfactory as compared with desensitization against pollens, and advises avoidance of food proteins which are known to offend.

The pathology responsible for these symptoms, as already indicated, is a multiple local edema, involving the small blood vessels and capillaries, and occurring in any or all tissues. The exact mechanism by which this edema is brought about may seem to be a question of unimportance; as a matter of fact, it is of considerable importance if we are to treat the condition intelligently with drugs. For a long time urticaria has been treated by calcium lactate, on the theory that a deficiency of calcium in the blood is responsible for the condition by delaying the coagulation time. G. R. Minot,[4] in studying three cases of severe urticaria, found the coagulation time normal in two of them, and delayed in one; and Pepper and Krumbhaar[5] deny that there is any deficiency in calcium. Possibly the anaphylactic agents, such as foreign serum or shellfish (Heidenhain's lymphagogues of the first class), produce localized edema by injuring the capillary walls, causing an increased permeability, as shown by the protein-rich nature of the exudates.[6] Or, according to Martin Fischer,[7] the edema may be due to a localized increase of acid products, caused by the anaphylactic process, resulting in the tissue colloids imbibing water. Fischer produced an experimental urticaria on a gelatin plate by injecting formic acid into the gelatine with a hypodermic syringe and then immersing the plate in water. A typical urticaria wheal resulted wherever the acid had been injected. This phenomenon has a close analogy in the wheal from a mosquito bite or a jellyfish sting.

At all events, the exact mechanism of the process is still a matter of discussion. Without denying that calcium lactate may have a place in therapeutics, it should be borne in mind that it is by no means the panacea which some people regard it. The best treatment in localized edemas such as we have been discussing is, first, to rule out non-anaphylactic causes, and then by means of the cutaneous tests to isolate the offending protein, and manage the case accordingly.

Perhaps the testimony of a few men who have employed these reactions will carry weight.

F. B. Talbot, of Boston,[8] in discussing the "Rôle of Food Idiosyncrasies in Practice," says that eczema has been shown in many instances, and arthralgia in some cases, to be due to food sensitization. In regard to the inheritance of such sensitizations, he finds that in twenty-nine of thirty-six cases studied, there was a definite family history of asthma, hay-fever, or eczema.

H. F. Shattuck, of New York,[4] says that the almost constant appearance of general urticaria in such definite anaphylactic conditions as serum sickness, together with the beneficial results obtained in some cases of urticaria from protein restriction in accordance with positive anaphylactic skin reactions, points strongly to a protein sensitization as the etiology of most urticarias.

Charles J. White, of Boston,[9] using the cutaneous or intracutaneous tests, found about 80% of eczematous patients sensitive to some of the common food types. He is not as optimistic, however, as some investigators, in the therapeutic results obtained by eliminating foods as indicated by the tests; he has had more success in this way with children than with adults. It is necessary, of course, as White has done, to rule out other possible causes of eczema, such as fat indigestion, by examination of the stools.

Blackfan, of New York,[9] found that of twenty-seven patients with eczema, twenty-two gave evidences of susceptibility to proteins, and that the removal of some or all of the animal proteins from the food brings about great improvement in some cases of eczema in older children and adults.

N. S. Ferry, of Detroit, Michigan,[9] concludes that the anaphylactic phenomenon is one of the most valuable diagnostic agents we have at present.

Cooke, of New York,[1] found that the cutaneous tests have given satisfactory results in 50% of urticarias, 25% of angioneurotic edemas, but did not give results in eczema or hypertrophic arthritis. He brings out the important point that over 50% of sensitized people show sensitization to more than one protein.

J. A. Turnbull, of the Massachusetts General Hospital, Boston,[10] is an enthusiastic advocate of the anaphylactic tests, and has had wide experience in the work. He has found positive reactions and has met with therapeutic success by removing the specific proteins in many cases of gastro-enteritis, headache, chronic constipation, arthritis deformans, hay-fever, asthma, psoriasis, eczema, urticaria, angioneurotic edema, erythema multiforme, and one case of lupus erythematosus. He has also used the tests on normal individuals with no symptoms, as controls, and has found uniformly negative reactions.

The technic of the cutaneous tests is extremely simple. The powdered protein extracts may be obtained in ampoules from several pharmaceutical houses. The following is the procedure used by Dr. Turnbull.

1. Wash the flexor surface of the forearm from the bend of the elbow to the wrist and rinse with 70% alcohol.
2. Dry with sterile gauze.
3. Using a two-tenths per cent. solution of KOH as a diluent, place one drop just below the bend in the elbow. Distal to this, place three drops across the forearm, each drop

equally spaced. Cover the remainder of the forearm with similar three-drop rows, stopping just before reaching the tendinous part of the wrist.

4. With a sharp scalpel make an incision about five-tenths of a centimeter long, through the drop into the skin, but not deep enough to draw blood.

5. Immediately place a small bit of the powdered protein on the end of the knife blade, and mix it thoroughly with the drop of KOH. Perform a similar operation with the remaining drops, using a different protein with each one.

6. The first drop just below the bend of the elbow is used as a control, the incision being made, but no protein added. The location of the control drop may be varied, but Dr. Turnbull has found this region to be particularly sensitive, so that if there is any tendency to a false positive reaction, it can be easily detected with the control in the most sensitive area.

Usually there is a slight transient non-specific wheal formation, due to trauma, but this can be ruled out because it occurs in the control as well. It lasts a variable time and may disappear.

The true reaction occurs from two to twenty minutes or longer after the protein has been applied. Usually the reading is taken fifteen minutes after the last incision has been made. Dr. Turnbull regards a reaction as positive when there is a wheal, an erythema, or a combination of the two with a total narrow diameter of three millimeters, or more, appearing at the site of some of the incisions, but absent in the control incision. A reaction less than this should be regarded as negative or questionable. Some reactions may be very intense and involve a large area.

Practically all of the proteins with which an individual is likely to come into contact are obtainable on the market in a purified state. Thus we have the food proteins, such as beef, pork, chicken, lobster, strawberry, banana, wheat, rye, etc.; different bacterial proteins, pollen proteins, and inhaled animal proteins, such as horse, dog, or cat dandruff or hair, etc. It is not necessary to try out the whole list on every individual; the indications in each case should determine the procedure.

You probably already have in mind the practical bearing of all this. Suppose a patient comes to your office complaining of chronic urticaria and constipation, and with no definite ideas as to etiology. Is your treatment going to be rational or irrational; is it going to be scientific or of the old-fashioned hit-or-miss variety?

Are you going to give him salol or beta-naphthol as an intestinal antiseptic, calcium lactate for a hypothetical deficiency of calcium in his blood, and tell him to stop eating all meats? Or are you going to determine in a very simple manner by skin reactions to what proteins he is sensitive and regulate his diet according to definite indications, beginning, of course, with a thorough catharsis?

According to the first line of treatment there are three objections. In the first place, the efficacy of intestinal antiseptics is a matter of considerable debate, but, granting their value, they can never result in permanent cure so long as anaphylactic proteins are being ingested or inhaled. In the second place, the evidence in favor of a calcium deficiency in urticaria is balanced or even outweighed by evidence to the contrary. However, some very capable men claim satisfactory results from the use of calcium, and it is possible that some urticarias and angioneurotic edemas may be due to a disturbance of calcium in the blood, brought on or aggravated by such decalcifying agents as fruit acids. This is open to question.

In the third place, and most important of all, the prescription of a diet should be as carefully considered, and as intelligently ordered as the prescription for any drug. What good is it going to do our patient when we tell him to cut out all meats and fish and raw fruits, if his symptoms are due to the wheat or rye in his bread, or the casein in his milk? Cooke[1] emphasizes the fact that over 50% of sensitized people show multiple sensitization. Our patient may be sensitive to beef, eggs, shrimp, wheat, casein, and beans. How is it going to benefit him, then, if we order him to eliminate from his dietary all meats, or all fruits, or all vegetables? Diet is an individual problem, and we should endeavor to make the food fit the patient, instead of trying to make the patient fit the food. A tailor who would attempt to fatten up his customer so that he would round out a certain desirable suit of clothes, instead of altering the suit to fit the customer, would be sent to the Psychopathic Hospital.

In other words, the aim in treating any disease should be to remove the underlying cause; with this in mind, drugs are useful as adjuvants. The cutaneous anaphylactic reactions offer a means for determining the underlying cause of disease in a large number of conditions.

In conclusion, let us look forward a bit and see if any other diseases are likely to fall within the scope of analysis by this method.

Louis F. Bishop, of New York,[11] regarding arteriosclerosis as being due to a disturbed physiology of the cells of the body of wide general distribution, resulting in degenerative changes in the blood vessels and all the organs, emphasizes his belief that there is a disturbed relationship between the cells and the nutritive material with which they have to deal, or the bacterial proteins with which they come into accidental contact. Undoubted and well-recognized benefit is seen in such patients when there is diminution of the intake of animal food, but he has secured equal, if not greater improvement in the condition of the patients, not by a low protein diet, but by what he calls a "few protein" diet. "The question is not whether food is good food, or has a certain food value, or what its qualities are, so much as whether it is the right food for the one who has to live on it." He believes that the proper study of dietetics in disease depends upon a study, not so much of the food as upon the reaction of the patient to the food. And this, in a few words, epitomizes the theme of our discussion.

In an article written two years ago, Bishop referred to the new work of food sensitization tests, but said that he had not employed them because the methods at that time had not been standardized. Purified proteins have only recently been obtainable on the market.

His usual method of treating arteriosclerosis is to remove all classes of usually offending proteins, such as are contained in eggs, fish, meat, etc., and after definite improvement has set in, to return these proteins one at a time, noting the effects, and permanently eliminating those which cause bad reactions, as measured by pain, blood pressure, indigestion, renal function, etc.

To quote a paragraph[12]:

"A man with arteriosclerosis, feeling pain in his chest every time that he moves, suffering from a blood pressure that is so high as to be a danger to his life, with kidneys that are unable to perform their functions, can by proper diet, exercise, and attention to the state of his intestinal canal, be so improved that he will present all the appearances of health, perform all labor that can be reasonably required of a man of his age, and can live out the period of his expectation of life as laid down by the insurance tables. That is all one could ask."

While it is perfectly possible and not at all unlikely that arteriosclerosis may result from conditions other than anaphylaxis, at the same time there is experimental evidence to support his views. I would call attention to the work of T. H. Boughton, published recently in the *Journal of Immunology*.[2]

He found that repeated injections of foreign protein, such as egg white and horse serum, into sensitized guinea pigs, produced lesions of the smaller arteries of the liver and spleen in 100% of cases, and of the kidneys and heart in 66% of cases. These lesions were characterized by degeneration and regeneration of endothelium, edema and fissuring of intima and media and sometimes splitting of the internal elastic lamina. The lesions were interpreted as being subacute rather than chronic. Five animals were injected with from twelve to seventeen doses of egg white or beef serum during a period of six to eighteen weeks, the doses being so spaced as to avoid anaphylactic shock at any time. This experiment simulates the condition in the human arteriosclerotic who receives by mouth frequent small doses of a protein to which he has, for some reason or other, become sensitized. When the animals were finally killed and the tissues examined histologically, vascular lesions were found similar to those in the other experiments, but less severe than in those animals which were allowed to die in anaphylactic shock.

Certainly the disease of arterioscelorisis is a field which bears investigation by means of the cutaneous protein tests.

In view of the steadily rising death rate in cancer under surgical treatment, L. D. Bulkley,[13] senior physician to the New York Skin and Cancer Hospital, in his monograph on cancer, just published, speaks as follows:

"Personally, I believe that sooner or later it will be generally recognized that the starting point of cancer occurs in some cell or cells, previously normal, probably as the result of local irritation, in which there is a deposit of some of the elements of faulty nitrogenous partition, induced by undue ingestion of animal protein; and that the malignant, reproductive process in the cells is kept up by a continuance of the same supply of imperfectly disintegrated nitrogenous matter.

"The x-ray and radium, as also caustics, are in the same position as surgery, and can do little more than cause to disappear, more or less temporarily, some of the lesions which have developed from causes which they cannot reach."

The New York Skin and Cancer Hospital maintains a medical clinic for cancer. Dr. Bulkley bases his arguments on many years of observation with successful medical and dietary treatment alone or combined with surgery or radiotherapy.

It is, no doubt, clear, from what has been said, that the employment of the cutaneous anaphylactic reactions has a legitimate and important place in the field of general medicine. Many cases will fail to give satisfactory results, both from a diagnostic and therapeutic standpoint, but that should not obscure the good results obtainable in other cases. Very few diagnostic agents are 100% perfect. The electro-cardiogram often shows nothing abnormal in a heart which may fail the next day. The Wassermann reaction frequently falsifies. Renal function tests are often untrustworthy. X-ray plates are sometimes of extremely negative value, especially in regard to showing gallstones or abdominal adhesions. And even the stethoscope may fail to detect a centrally situated tubercular process in the lung. Yet we would not give up any one of these adjuncts to diagnosis. Let us not be too harsh, then, in criticizing the cutaneous anaphylactic tests, but rather endeavor to improve the method and extend its applicability.

It is not within the scope of this paper to discuss the therapeutic measures intended to cure anaphylaxis by the administration of desensitizing doses of the specific protein. I wish only to emphasize the importance of the cutaneous anaphylactic tests as a diagnostic agent.

I think the most important statement in this discussion is that of Bishop's, in which he insists on the fact,—

"The proper study of dietetics in disease depends upon a study, not so much of the food, as upon the reaction of the patient to the food."

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DIFFERENTIAL DIAGNOSIS IN PSYCHIATRY: A COMPARISON OF SYMPTOMS IN VARIOUS DISEASE STATES.*

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The importance of accurate observation and intelligent interpretation of symptoms is, perhaps, nowhere in medicine so clearly seen as in psychiatry; and in psychiatry nowhere any more plainly than at the Psychopathic Hospital. There are two reasons for this latter fact: (1) the short period of observation; (2) the large number of border-line and "not insane" cases which are seen.

Receiving only temporary care, voluntary or special legal cases, which for the most part remain not more than ten days in the hospital, it follows that rapid, intensive work is necessary, with accurate observation and intelligent interpretation the *sine qua non* of success in the work.

Hence, it is necessary that the symptom analysis be thorough, and *symptoms* and *states* be correctly related to disease process, if our diagnoses and prognoses are to stand the test of critical inspection by relatives, courts or state hospitals to which the patient may be sent. It is clear that mistakes cannot entirely be avoided, but all mistakes should be studied with diligence and avoided thereafter. It is usual to find that understudy or improper interpretation are at the bottom of the more serious errors.

Careful study and analysis are particularly necessary in order to avoid the most common error in psychiatric diagnosis,—that of classifying any dementia or poorly understood case as one of dementia precox. This is little more than a scientific crime, and tends to retard the progress of psychiatry. It is far less dangerous to plead ignorance and leave the case undiagnosed than to be pseudo-scientific and pronounce the case one of dementia precox. If this disease is to stand as a psychiatric entity, it must have a recognizable symptomatology. Nor is *outcome in dementia* sufficient to establish such a diagnosis. The dementia must be of a particular sort, since precox is *not* the only disorder whose sequence is dementia.

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* A contribution of the Massachusetts Commission on Mental Diseases, series of 1918.

Similarly, we may take any other symptom or state,—dementia may be regarded as either,—and we find that it may occur in a variety of diseases, each of which, as a rule, has certain characteristic signs.

We have found that a most useful division of mental activities is that into the sensorium-intellect and emotions-will. It comes out quite clearly on analysis of any large group of cases that the types of disease process associated with disorders chiefly in one of these two fields (obtained by reduction from the original four) are very characteristic.

Thus, those mental *states* in which the symptoms are primarily and predominantly in the sensorium-intellect field are very clearly related with the toxic-organic-epileptic disease processes. Also, the disturbances primarily and predominantly in the emotion-will field are clearly related to the schizophrenic-cyclothmic-psychoneurotic-psychopathic group of disease processes, *i.e.,* with disorders of the types usually thought of as functional.

Hence, it is necessary to differentiate with great care between primary and secondary effects in any mental state; and to determine degree of disturbance in all fields. A depressed patient may develop *paranoid* ideas (often as a rationalization of the state), while, conversely, a paranoid patient may develop a *depressed* state, as the emotional reaction to the ideas. In each case, the complex mental state may, on superficial analysis, appear to be the same; yet how different is the total effect after careful examination and evaluation, and how different the end state!

Primary symptoms are those which are common to all cases of a particular group: for instance, the emotional changes of dementia precox or the intellectual losses in paresis. These are obviously the most important and characteristic symptoms. The secondary symptoms are those which occur in some, but not all, cases of any group—such as the hallucinations in dementia precox, or the delusions of grandeur in paresis. Such are diagnostically of great importance when present.

Then we have certain rare symptoms,—the symptoms may in themselves be common, but rare in particular combinations. Thus *real* memory defect is not an essential constituent of the dementia precox picture, though it does occur. In these cases, the memory defect is always more apparent than real, and never dominates the disease picture.

The *primary* symptoms are *not* always predominant; frequently they are detected only with difficulty because of the greater rôle assumed by secondary and rare symptoms. It is in such cases that experience and skill in examining and interpreting symptoms are of such great importance in determining diagnosis and prognosis.

We must realize that in most cases of mental disease the *entire* mind is affected, but the affection is usually differentially greater in certain fields according to the etiology. The disturbance may be only very slight in certain fields of activity, while very marked in others. Always we can recognize the primary and secondary elements in the mental state, and from a clear analysis of these we can easily proceed to the more important etiological diagnosis. At present psychiatric entities represent a queer mixture of state, etiological and prognostic ideas. Thus manic-depressive is a diagnosis of *state,* as is organic dementia. General paresis and arteriosclerotic psychosis are typical examples of etiologic diagnosis; and dementia precox often represents a prognostic diagnosis (especially in the paranoid forms). This merely reflects, of course, that the heterogeneous condition of clinical and pathological work in psychiatry is, perhaps, only a reflection of the infinite difficulties of the study of mind.

With these various points in mind—the analysis and interpretation of symptoms; the conception of *states,* with primary and secondary phenomena; the necessity for careful and complete analysis of the *whole* individual; the relationship of states to causal processes; and the scientific importance of symptomatic (as opposed to termination) diagnoses—it has seemed worth while to present a brief analysis of mental symptoms and states which shall be of value in clearing and unifying diagnostic lines, even though we recognize the constant changing of concepts and know that eventually the lines must be recast.

This paper does not present anything especially new, but largely represents a re-working of standard psychiatric material from the viewpoint of rapid and thorough differential diagnosis. What we are especially interested in is in rapidly narrowing down the diagnostic field to a few possibilities, and then finding the characteristics which permit *accurate* diagnosis.

On the side of sensorium-intellect we have to do with disorders of perception (illusion, hallucination); of attention (hyperprosexia, aprosexia); of consciousness (clouding and disorientation in their various degrees); of memory (retentive, recollective and associative as types; amnesia, hypermnesia, paramnesia, as symptoms); of judgment (delusions, fixed ideas, obsessions); and the judgment and memory largely determine the associations (though not the associative mechanism).

Combined disorders of the certain of these—namely, disturbances of attention, consciousness and *especially* of memory—are particularly characteristic of the various disorders in which we find actual discernible causes for damage to nerve cells,—alcoholism and other exogenous poisons, fever, organic disease of the nervous system (meningitis, syphilis, arteriosclerosis, senile atrophy, trauma, tumor), endogenous toxemias (*i.e.*, so-called somatic or symptomatic psychoses), and epilepsy. In addition, in many of these cases we find very characteristic hallucinations and delusions.

We may contrast the very active processes (usually of toxic origin), such as delirium tremens, with the less active (usually organic), such as senile dementia. In the former case the entire mental life is taken up with the fleeting mass of terrifying hallucinations and delusions, and consciousness is markedly clouded; in the latter there is progressive and gradual loss of the stored knowledge, plus attention and consciousness disorder, so that the patient loses the higher faculties of self-control, *i.e.*, inhibition lost through ignorance.

It takes no particular argument to show that in the groups of psychoses mentioned the major symptomatology lies in the sensorium-intellect. A first group—paresis, senile dementia, arteriosclerotic, the chronic alcoholic psychoses (except alcoholic paranoia), some of the somatic cases, epilepsy, *i.e.*, in general the chronic "dementing" group—have as primary symptoms of the mental trouble disturbances in the retentive field (of memory), combined with certain disturbances of attention and assimilation and often of consciousness. Other symptoms may be very variable and running through the entire range of mind, but these are the symptoms common to all cases of a particular group. The differential diagnosis between groups is, then, to be based on special signs and symptoms of each.

Thus we differentiate paresis largely on the neurological changes: pupils, reflexes, speech, handwriting. The state of activity is not, as a rule, of much differential value, though rarely it may be. Such symptoms as delusions of grandeur, euphoria, etc., are very characteristic when present, as they are in a certain percentage of cases.

Senile dementia is differentiated on the basis of age at onset, the characteristic loss of *recent* memory, with the retention of remote memory, disorientation,—the patient living in the past,—with restlessness at night, forgetfulness for immediate happenings, and conduct disorder.

Alcoholic deterioration is characterized by the long history of alcohol, the loss of details in memory, the humoristic emotional tone, lack of finer sensibilities, and the absence of signs of organic disease. One particular chronic alcoholic psychosis, Korsakow's syndrome, is especially characterized by polyneuritis, memory disturbance and fabrications. When the active process subsides, we very frequently find a pronounced alcoholic dementia.

Arteriosclerotic brain disease is to be differentiated on the basis of recurring periods of confusion, with amnesia therefore and neurological changes characteristic of the disorder. The age of onset is also of importance, as is emotional instability.

Epileptic "dementia" is to be differentiated by the history of fits, the striking slowness of reactions (without depression), and the pathological irritability. The diagnosis may be correctly made even in the absence of a good history of frank fits, by the minor signs. Of course the important thing in epilepsy is the etiology, for which intensive search should always be made. The epileptic psychoses are, as a rule, more nearly allied to the next large group, with which they will be considered.

In the second large group, *i.e.*, the acute alcoholic (with the important exception of acute alcoholic hallucinosis), other acute toxic psychoses of exogenous origin, severe meningitis, acute traumatic, acute somatic (including puerperal, cardio-renal, etc.), fever psychoses, and epilepsy at or after a convulsion ("psychic equivalents")—in general, then, the acute "fulminating" group—we have to do with very active symptoms in the field of consciousness and perception (confusion, disorientation, failure of attention, hallucinations and illusions, especially visual); and usually the patients are so difficult of examination that memory cannot carefully be tested, but it is sure to be much confused (though not entirely lost) if tested. The consciousness disturbance varies from only a slight cloud to stupor,—perhaps muttering delirium,—and perceptual disorders are usually present to a marked degree. With recovery of consciousness we find characteristic circumscribed amnesias, but without much loss in the memory of events previous to the attack. In these cases we have very marked disorders: delirium, semi-delirium, stupor; and the very first thing we need to know is the cause.

So with any *confused,* hallucinated, and terrified or active patient, or with a stuporous patient, we need to examine at once for alcohol, for the acute infectious diseases, including pneumonia, typhoid, cerebrospinal meningitis, blood infections; for retained uterine contents in the post-partum cases; for chronic disease such as cardio-renal and diabetes; for organic disease of the central nervous system; for epilepsy.

Hence, we need to know the immediate history and physical state of the patient; temperature, pulse and respiration; lumbar puncture; blood findings (cytology; culture; nitrogen content); urinalysis. Thus we have erected at once a practical program for speedily determining cause and starting effective treatment. A careful physical examination, including urinalysis and the temperature, is the most important of these, aside from a history of immediate etiology. Based upon these, we can proceed to other tests, such as lumbar puncture and blood examination, which may be needed to clear up the etiology. In fact, this may be said to be the ideal method of procedure in any case of any group,—the quick but accurate evaluation of the mental symptoms making up the state, the immediate history, the physical examination determining the presence or absence of physical disease.

We must remember that not all physical diseases are capable of causing mental disease, and that mental disease of any type may co-exist with almost any type of physical disease. It follows that for the establishment of etiological factors the mental disturbance must be of the type which the somatic disease ordinarily causes. Only after the most searching and rigid analysis should markedly atypical cases be included.

In the confused, hallucinated, amnestic patients, we are most likely to find acute causes of one sort or other, which are amenable to the more ordinary types of treatment. It is in this group that the internist, surgeon and gynecologist are of the greatest service.

The differential diagnosis in this group depends obviously on the establishment of a toxic cause by history or, more particularly, by the physical examination. It must be remembered that in some groups the delirium is but the forerunner of a prolonged attack. Such is true in those Korsakow's cases where the onset is with a delirium-tremens-like attack. Similarly, it is extremely difficult in the puerperal cases to make out whether we are dealing with a purely toxic affair, or whether the puerperium and toxemia are merely exciting events for a manic-depressive or dementia precox psychosis. There are a number of other rather obscure points in this group.

From the standpoint of differential diagnosis, the important point is to realize that confusion and amnesia characterize the organic group, while confusion, circumscribed amnesia and hallucinations characterize the toxic group, with epilepsy sometimes in one group and sometimes in the other.

Primary disorders in the field of the emotions and will are most clearly made out in dementia precox, manic-depressive, psycho-neurotic and psychopathic states. The emotions are subject to various morbid alterations,—exaltation, depression, instability, dulling or deterioration. The will shows itself in disorders of activity; of influencibility, ranging from pure negativism to extreme suggestibility; in impulsivity. The disorders in these two fields tend to occur together in certain fairly definite combinations.

The complicating factors in diagnosis lie in the fact that emotion-volition disorder occurs in psychoses belonging to any group, and the conduct may be quite similar in groups of widely varying etiology. The essential points of differentiation lie in the state of consciousness and in the memory, together with an analysis of the fitness of conduct to ideational background.

The simplest psychotic state known is that of the manic-depressive, either manic or depressed. Here we have to do, in the milder types, with an exaggeration of normal emotion and will. Intellectual processes, though accelerated or slowed, are not as a rule greatly damaged, and there is no disturbance of memory or consciousness. They tend to recovery without dementia. Disturbances of consciousnesss, with resulting circumscribed amnesia, do rarely occur; but only in the very severe attacks and never predominating the picture.*

In these states hallucinations are very rare. Delusions are fairly common, but their content always agrees with the emotional state, and they are usually personal,—either somatic or autopsychic.

More complex are the schizophrenic states, where again the emotion and will disturbance is the predominant feature. Here the disturbance is in a new direction—the emotions and will impulses do not correspond. The indifference to all about them is striking, as is the indifference manifested to ideas which are in themselves of a torturing nature. With a clear consciousness they are hallucinated; giving the *impression* of clouding and of memory loss, they are, nevertheless, oriented and without particular memory defect. Even the negativism, muteness and stupor are often recovered from with surprisingly little amnesia for the period when the patient seemed entirely withdrawn. The difficulty in these cases is in accessibility and in expression (both dependent on volition); not in the state of consciousness or in loss of intellect. Hallucinations and delusions of all sorts occur, but the reaction is usually not in accord with the beliefs held by the patient. States of excitement and of depression occur and tend to alternate rapidly; the production is often senseless, revealing the crossing of will impulses; the activity is queer and not easily understood; there will be evasiveness, inability to think connectedly, mannerisms and many other symptoms referable to will difficulty. The essential point we must recognize is that clouding of consciousness and intellectual disorder are *not* the characteristic symptoms of the precox process—and that we must hesitate to make such a diagnosis in cases where symptoms are not predominantly in the emotions and will.†

Accordingly, we find that in the emotion-volition group the manic-depressive is characterized by quantitative alterations, without intellect or perception disorder. The dementia-precox case is characterized by a mixture of qualitative and quantitative disorder; in both, by a splitting, such that reactions do not correspond to emotions and ideas; and by secondary symptoms of mania, depression, hallucinations, delusions, etc. Particular types have characteristic symptoms, such as the cerea flexibilitas of catatonia. But common to all are the stupidity, queerness, dulling of emotions, difficulties in thought and expression, etc., without any clouding of consciousness or delirium.

In the psychoneuroses we have to do with disorders of emotion and will, and not with intellectual disorders. Such alteration of consciousness as does occur is a narrowing of the field (Janet) and not a clouding of the entire field, as is characteristic in our first group of cases.

The dream states are particularly characteristic in this sense. In the dream state there is partial or complete dissociation of the personality, and all sorts of queer events may happen. Here we are apt to find disorientation and clouding of the existing consciousness. The differential diagnosis is then to be based on history and the reactions of the patient. The hallucinations tend to be of the scenic sort,—uncontrolled and vivid imagination. The emotional response is likely to be normal for the ideas entertained. Loss of consciousness apparently occurs, but is not really complete, since it can always be penetrated by some person or persons.

The psychopaths represent cases of abnormal make-up, the difficulties lying chiefly in the emotional and will field. Usually recognized because of conduct disorder, we find on analysis that the causes lie in improper relations of emotion and will. As a rule the intelligence is of normal level, though it may be qualitatively abnormal. Reference to various forms of sexual psychopathy very quickly proves this point.

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* Very striking is the case of a woman, 75 years of age, in her third attack of manic-depressive depression with *no* disturbance of consciousness and no detectable memory loss, showing the typical picture of depression, retardation and underactivity.

† A particularly striking case may be very briefly presented. This man's cerebellar tumor, as shown at autopsy, was correctly diagnosed at his second admission here. Despite the fact that his symptoms were all in the intellectual (memory loss as the outstanding symptom) and motor (speech and gait) fields on his first admission, two years previously, he had been called dementia praecox! Just previous to this he had been psychoanalyzed with —to quote his physician—"75 per cent. improvement!" A full report of this case is to appear later.

These points are so well known that they would seem to need no further elaboration.

There is one important toxic psychosis in which disturbance of consciousness is absent, the memory is intact, and the symptoms are mainly in the field of the emotions and will (with characteristic hallucinations and delusions). This is acute alcoholic hallucinosis. But the *typical* cases of this resemble dementia precox more closely than anything else; in fact, we may wonder if it is not toxic dementia precox. Here the history is of great importance in the diagnosis.

Finally, there is one great group of cases in which the disorder is chiefly intellectual, but of a particular sort. These are the paranoid states (omitting paranoid dementia precox, where the important thing is the precox disturbance). There is no consciousness disturbance and no disturbance of retention and recollection (beyond possible falsification in line with the delusions), but there is a marked judgment disorder. The emotions are chiefly exaggerations of the suspiciousness group, with at times other disturbances. The will may or may not be controlled by the ideas. These *paralogical* states occupy a position of their own, and in only a few is the etiology clear (*e.g.*, so-called alcoholic paranoia). Of those *not* dementia precox, we have paranoia, paraphrenia, jealousy psychosis (usually of alcoholic etiology) and the presenile psychosis (ideas of reference predominating). Differential diagnosis between the various types is to be based on history and symptoms.

According to my views, we need to analyze the *state* of the patient very quickly. We need to know the condition of consciousnesss and orientation, the gross memory, delusions and hallucinations, emotional tone and reactions—the latter with special reference to will disturbance. Given these facts, which can be obtained in a short interview, together with immediate history and certain physical phenomena already mentioned (neurological changes, temperature, general physical condition), we should be able at once to say in which of the several large groups here erected the difficulty lies. If the evaluation and interpretation are correct, then the case becomes one for finer differentiation within the large group. This represents diagnosis by exclusion, but not in the sense of ordinary physical diagnosis, since the state of the psychotic patient is always more complex, and the presenting symptoms more numerous than is the case with physical disease alone. The order of exclusion is important, but represents another viewpoint, which I shall not discuss.

The problem is, of course, complicated where there is no obvious psychosis present. Here the analysis must proceed to demonstrate the absence of psychosis, and determine then (*a*) whether the patient is normal or abnormal, and (*b*) if abnormal, whether it is psychoneurosis, psychopathia, or feeble-mindedness, or some other form of neurological or psychiatric difficulty.

Accurate differential diagnoses can be made only if the observations are detailed and thorough, and if the examiner interprets correctly and properly aligns the symptoms with causes. Symptomatic diagnoses should be the rule, and should be checked against outcome in every case.

STRUCTURAL DEFORMITIES VERSUS FUNCTIONAL EFFICIENCIES AS OBJECTS OF TREATMENTS.*

By Herman W. Marshall, M.D., Boston.

Patients with stiff knees can usually find some physicians who are willing to advise restorations of motions by surgical interference; and other patients with damaged knee joints, which still permit some motion, can find physicians who will advocate making such knees stiff by operative means.

Or again, straight, stiff legs may be thought less preferable than slightly flexed, rigid knee deformities; yet in other instances immovable knees already bent are straightened.

Hips, elbows, and other joints with impaired functions likewise at times are stiffened, while joints ankylosed already in other cases are made movable again.

The interesting questions that these clinical procedures raise are those which constitute the most desirable methods of treatment and the reasons involved. The answers can be made convincingly after first reviewing some of the peculiarities of the present stage of medical development.

Modern scientific methods used in medicine have revealed how erroneous and fantastic frequently were the theories and ideas held by old medical practitioners who were unscientific, and who relied so largely on their own independent observations and what was termed "common sense."

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* Read before the New England Association of Physical Therapeutics, on April 23, 1918.

Such tremendous advances have been made in the last fifty years or more,—progress previously impossible through past centuries, without exact science,—that one occasionally wonders whether there are any limits to scientific attainments, or whether there is such a possibility as too rapid growth of scientific medicine.

As past achievements are reviewed, there may be seen important medical problems solved, satisfactory broad biological and scientific preventive medical theories advanced; and in clinical practice a notable increase in numbers of special practitioners. Ranges for individual endeavor in medical practice have narrowed and deepened until newly made specialists of late have been predicting that the days of general medical practitioners have passed.

There has been so much to do in all special fields of scientific medical work, and so much enthusiasm and friendly rivalry among special workers that scientific facts have accumulated at an extremely rapid rate. In not a few instances the fascinations of making new additions to medical knowledge apparently have partly eclipsed the main consideration of medical practice, namely, the welfare of patients.

There has tended to develop under these circumstances what may be called, appropriately, *malignant scientific development*,—an abnormally rapid growth which is of benefit to medical science itself and possibly to future generations of patients, but harmful to present-day sufferers when it absorbs attention that should be given to the numerous other factors which always enter into every patient's problems.

Such excessive scientific development may be compared to the rapid growth of a malignant tumor,—development which is all right for the tumor itself, but injurious to the person who possesses the new growth. So the welfare of the present generation of patients is influenced by the rate of growth of medical science, benignly affected by moderate progress and unfavorably influenced by its extremely slow or excessively rapid rates.

Limitations of extreme scientific clinical specialists already have become so obvious at the present time that renewed efforts are being made to group them into single combinations possessing greater usefulness and of more even balance. By this procedure it is hoped that the practical common-sense judicial capacities of old-time practitioners will be included along with most specialized scientific knowledge, because it is becoming recognized more and more generally that strictly scientific methods are quite inadequate for the most successful management of numerous varied clinical difficulties encountered.

No reasons exist for supposing there ever will be a time when comprehensive judicial abilities alone or conservative scientific methods independently will be sufficient for all requirements of clinical practice; on the contrary, a properly balanced system resulting from the combination of these two opposite factors always, presumably, should govern treatments of patients.

To return to the special topic of structural deformities and functional efficiencies as objects of treatments, at the outset let it be clearly understood that deformities of themselves show results of previously acting causes; and, secondly, they may occasionally simultaneously contribute to existing pathological symptoms or be contributing causes of future peculiarities. They must not be considered origins of abnormal symptoms, when really they commonly represent only the anatomic results of previously acting causes.

Deformities may consist of mal-positions in reunited bones after fractures or congenital bony defects originating in obscure prenatal causes. They may be the results of slow changes going on after birth in muscles and ligaments, which produce round shoulders, hollow backs, lateral curvatures, visceral ptoses, and faulty postures in general; as well as the anatomic defect of flat-foot, which results from weakness of ligaments and muscles of these parts.

Diseases and peculiarities originating within bones themselves or in joints are responsible for structural peculiarities in some instances; but in this paper will be considered principally musculo-ligamentous causes for deformities.

A person's attitude, or form of his feet, or positions of his fractured bones alone, are often inadequate for judgments and treatments of functional efficiency. An individual may have a stooped posture, or a slight lateral twist of the spine, and yet be strong and vigorous, provided there have been strengthenings of musculo-ligamentous stays subsequently to developments of these structural changes. Natural physiologic hypertrophies of muscles and ligaments are the normal compensatory results of increased strain and increased use of muscles and ligaments.

A moderate postural defect in one person may have had very slow continuous development, and have reached a balanced state through compensatory musculo-ligamentous hypertrophy at the time of medical examination; while a second patient may have acquired a similar postural defect recently and rapidly, and this person, perhaps, will have back pains with the same degree of anatomic deformity as the other individual. The cause of abnormal symptoms in the second case cited is not due to the existing deformity, however, but to acute musculo-ligamentous weakness and strain.

Similar relationships exist in feet with regard to structural variations in their forms and musculo-ligamentous changes in strengths from time to time. With fractured bones it is universally recognized that good alignment of the fragments does not necessarily signify best possible function, if muscles concerned have been neglected so that their normal activities are seriously impaired.

On the other hand, it is not so very unusual to see surprisingly good function after fractures that have been surgically neglected, because muscles have increased rather than decreased in strength and usefulness in these particular patients.

Deformities are not without significance, nevertheless, and they may be of such serious degrees that compensatory muscular hypertrophies are inadequate for restorations of the normal physiological balance between the bones and their flexible stays. Certainly deformities should be treated and corrected as much as musculo-ligamentous factors in the balance of each situation indicate are likely to be needed. It is wished only to caution against destroying, or unnecessarily upsetting, fairly satisfactory functional efficiencies simply on anatomical grounds alone.

Reasons for these peculiarities of medical development are not difficult to see. Peculiarities and variations in gross anatomical structures can be observed easily, and are demonstrable to others; furthermore, the prominence and popularity of surgery has kept attention directed toward structural problems.

Musculo-ligamentous strengths, on the contrary, are uninteresting and troublesome to measure. Obscure physiological changes within living muscle and ligamentous fibers, which are responsible for changes in their strengths, have been looked upon as of interest only to laboratory scientists; and chemical and physical variations of the circulating blood which produce changes in musculo-ligamentous strengths are still imperfectly known on account of being extremely difficult to study. In consequence, naturally, the practical significance of variations in these flexible supports and muscular apparatus has not been quickly or completely comprehended.

Eventually, however, in the impartial study of all elements which enter into normal physiologic balances and into functional efficiencies there will be revealed clearly the equal importance of both structural and functional peculiarities.

Some pathologists and surgeons with strong anatomic tendencies still declare emphatically that it is dangerous to pay so much attention to mere symptom-complexes and difficultly measured functional troubles; but probably there is still greater danger in blindly ignoring the latter when directing treatments, as though these important, obscure considerations are non-existent.

What do we really know about muscles and ligaments at the present time? This question cannot be answered briefly, but if old physiological laboratory experiments which were done in medical school days, and generally promptly forgotten for more interesting clinical and surgical experiences, are resurrected, they will furnish quite a list of peculiarities of muscles, their reactions to electrical stimulation, to chemicals, to heat and cold and other physical agents. Perusal of modern textbooks of physiology will reveal exhaustive descriptions of theories of muscle fatigue and the influences of changing compositions of blood on muscle contractions. In gymnasia have been recorded averages and extremes of muscles strengths for many different groups of human muscles.

There are plenty of data upon the subject which physical therapeutists are familiar with, concerning the merits and limitations of exercises, passive motions, massage, radiant heat, various forms of electricity and so on; but the rest of us still generally need considerable additional education in these directions.

An interesting experience recently occurred to the writer in connection with some examinations of a number of Sicilian laborers who claimed to be suffering with back strains, but who were thought to be malingerers wrongly obtaining industrial accident compensation for their alleged injuries during the cold winter months.

These Italian laborers often have well-developed, hard back muscles and scanty subcutaneous fat, so that it is impossible to tell with absolute certainty whether soreness they complain of is real or feigned, and whether the muscles are normally tense or are abnormally contracted and rigid. The natural tendency of this class is to exaggerate their symptoms unconsciously, and if there are restrictions in ranges of back motions, together with alleged subjective symptoms of pain and local tenderness, the problem of discovering the real state of affairs is difficult, especially since x-rays are of so very little value in these troubles.

It occurred to me to test the lifting strengths of these patients' backs on a dynamometer, which records the maximum pull exerted in each instance. The results obtained were variable, but some patients lifted such absurdly small amounts, which they claimed were their maximum efforts, that no doubts remained in these cases as to the malingering phases of the situations.

Confirmatory evidence could sometimes be obtained, also, by testing in similar manner the strengths of other normal muscle groups, about which there were no complaints; and having already claimed weaknesses for their backs, the malingerers tried to play a safe game, and registered abnormally small maximums also for these other muscles as well.

Perhaps this experiment should be classified as detective work rather than legitimate medical endeavor; but it reveals the fact that in our thorough routine back examinations, as usually done by orthopedic specialists, we do not estimate accurately one of the principal functions of backs, namely, back strengths.

What justifications are there for fitting steel back braces, plaster jackets and, particularly, innumerable new corsets and webbing belts to anatomical peculiarities of backs, without taking into careful consideration each patient's musculo-ligamentous and physical therapeutic needs, also without deliberate judgments of general conditions and need of internal medical measures? It is true, nevertheless, many patients are tied up in orthopedic appliances simply, and apparently have very little else done for them.

What objections also are there to determining the limits of applicability of any operations that are safe and do not endanger the lives of patients?

Certainly a great deal of scientific information would accumulate if orthopedic surgeons with strong inclinations for stiffening damaged joints by operations could all plan to turn their patients over to other surgeons who believe firmly in attempting restorations of joint motions by operative procedures.

Such an arrangement would tend to increase surgical skill along these special lines, and if the second group of surgeons would refer their cases after treatment to the first group, both might always have a large supply to select from. Then if wise choices were made of patients who could afford to pay large fees, there would be adequate compensations received by the doctors for their continuous endeavors to advance medical science, and, furthermore, individual reputations might be enhanced by judicious publications of surgical results obtained. If enough momentum was attained to induce charitable organizations and institutions to become interested, then so much the better for the scheme.

The most serious drawback to this impossible plan is that patients' welfares are almost obscured and they become merely objects on which scientific surgery can develop. The illustration is given, however, to indicate that possibilities do exist for substitution of one defect for another, without great advantage to the recipients, in many instances; and this chance ought to be kept clearly in mind by all those who are concerned in the great problem of reconstruction of disabled soldiers and industrial workmen.

If practising specialists are more interested in scientific features of their profession than in individual welfares of patients, they ought to be grouped into single combinations, as has been suggested, with a responsible head who is obliged to look closely after patients' interests. Under these conditions it is possible to conceive of a very complete set of such doctors working together harmoniously, with an exceptionally well-balanced man to direct them that could accomplish results in no other way attainable; just as it is possible for the long-range German cannon to shell Paris now from an unheard-of distance at great expense, inconvenience and labor.

Let us not deny the possibilities of large pretentious groups of specialists, nor the advisability of having them for rare occasions; but let there be even greater insistence upon the fact that the enormous bulk of medical work can be done more satisfactorily by smaller groups of different kinds of special practitioners.

It is possible still for a single practitioner of average capacity to select some limited field in medicine, as, for example, affections of bones, muscles and joints, and become familiar enough with these topics to deserve the legitimate title of specialist. He can retain important personal relationships with the restricted class of patients he receives, which the older school of family practitioners maintained with their patients. It is possible for him to know advantages, limitations, and comparative merits of different therapeutic measures used in his specialty, and yet appreciate their comparatively minor values in treatment among patients who possess other ailments. In brief, he can be an old-time general practitioner within his narrow sphere, looking out for his patients' interests always, first with unusual care, and simultaneously advancing himself at a satisfactory rate in special scientific attainments.

Some patients he will treat entirely alone, while others he can send to other similar associates, one or more in a flexible manner, according to the obscurity and difficulty of individual cases. He can fit, as a consultant, into unpretentious shifting combinations temporarily from time to time for the purpose of group diagnoses upon other specialists' patients.

Altogether, this type of practitioner avoids so many of the present-day unfavorable tendencies, including dangers of over-treatment and excessive expense, that it seems that his good qualities and possibilities should be loudly proclaimed along with those of formal fixed groups.

Future time has to decide how strongly the new ideas of reconstruction among industrial workmen, sailors and soldiers will be influenced purely by surgical, mechanical, and anatomic factors; and how much can be advantageously done in fitting special structural deformities to particularly favorable industrial tasks without intervention of surgery. Both aspects deserve prolonged consideration and discussion, because there will be medical solutions of problems that are likely to oppose present ideas of labor organizations and uniform scales of wages for all workmen in each class. Variations arising from many grades of disability will necessarily make uniformity with fairness increasingly difficult, yet large numbers of partially disabled men will demand an opportunity to work as much as their abilities permit.

All practitioners of all kinds undoubtedly will give their best endeavors to the tasks ahead, and now is the time to bring forward friendly criticisms and comments in moderation. Accordingly, I wish to insist that functional efficiencies rather than structural deformities should be made the goals that are striven for.

We shall undoubtedly make progress somehow, and practical experience will point out, later, clearly where our successes and failures were made, but also at the present time we ought to try to keep the numbers of those at a minimum who are sacrificed to malignant scientific tendencies.

In conclusion, an answer to the questions suggested in the beginning of the paper will be made by the statement that each of the methods mentioned may be either right or wrong, according as they are used to increase or diminish special functional efficiencies in each patient, and depending upon the degree of success they fit each person treated to periods of future usefulness.

THE BEGINNING OF DISPENSARIES.*

By Michael M. Davis, Jr., Boston,
and
Andrew R. Warner, M.D., Cleveland.

In 1665, the great conflagration which devastation London brought in its fiery train a blessing, for it rid the city of plague. But the germs of poverty cannot be burned up, and the sickness and misery that follow poverty were so apparent to the public-spirited members of the medical profession of London, that in 1687, they voted that all members of the College of Physicians, their professional organization, should give their services to the poor without charge. In due form they transmitted this resolution to the Lord Mayor and Aldermen. When, however, the charitable-minded sought to call the good physicians to the service of the poor, no means was found of providing the medicines which the doctors wished to prescribe. The pharmacists of London were at that time organized as a guild, the so-called Apothecaries' Hall; and Apothecaries' Hall would not lower its prices, even when the College of Physicians requested it on behalf of the poor.

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* Reprinted, by permission of The Macmillan Company, from a forthcoming book on "Dispensaries: their Organization and Management," by the authors above named.

The physicians did not sit idle under this monopoly in the prescription market. Fifty-three leading spirits signed an agreement on December 22, 1696, to pay ten pounds apiece to Dr. Thomas Burwell, one of their number, which sum Dr. Burwell was to use for medicines for the poor. Thereupon the first dispensary in the English-speaking world was opened in the building of the College of Physicians.

THE FIRST DISPENSARY IN ENGLAND.

During the first five years of its existence, we do not know how many patients the doctors treated, but it is recorded that 20,000 prescriptions were given out. The physicians, however, complained that the dole of medicines was more highly regarded by the public than the freely given services of the physicians. We do not find this first dispensary mentioned in Addison's *Spectator;* but if the sentiment of the educated London public could have been gauged, we should probably find that the dispensary was regarded as a medical soup-kitchen. Medicines and medical services alike were doubtless thought of as a dole to the needy.

In the seventeenth century specialists in medicine had not appeared; modern scientific aids to diagnosis were unknown, treatment was necessarily of symptoms of diseases rather than of causes. The giving of medicines played a larger part in theory and in practice than it does today. The spirit of service characteristic of the medical profession, which led the London doctors of 1696 to establish the first dispensary in the English-speaking world, is the one fine continuing element through the whole history of the dispensary movement from this early beginning.

The later history of this first London dispensary is obscure; not until the latter part of the eighteenth century are dispensaries again noticeable in London. In 1770 the so-called "General Dispensary" was started, and four years afterward, the "Westminster Dispensary"; in 1779 the "London Dispensary," in 1780 the "Flushing Dispensary" and in 1782 the "Eastern Dispensary." These institutions were supported mainly by private subscriptions, usually of one guinea; patients were accepted only when recommended by a subscriber, and it is said that they were required, when discharged from the care of the dispensary, to return thanks to the subscriber by letter. Dr. Lettsom, one of the first physicians of the General Dispensary in London, said, under date of 1801, referring to the five London Dispensaries, "50,000 poor persons are relieved annually, one-third of whom are attended at their own dwellings: a mode of relief which keeps the branches of the family from being separated and affords the wife an opportunity of nursing the sick husband, or child, or the husband to superintend and protect the sick wife. And by this mode of conveying relief to the bosoms and houses of the poor, the expense is trivial indeed, as one guinea, which is the annual subscription of a governor, affords the means of relief to at least ten patients."

Thus, during the latter part of the eighteenth century dispensaries blossomed in the English metropolis.*

Dispensaries do not appear to have been established in America until after the Revolution, but within a few years following the conclusion of peace, each of the three chief cities in the United States had, as will be seen, followed the example of London and established a dispensary.

DISPENSARIES IN THE UNITED STATES.

The first was started in Philadelphia in 1786. The Philadelphia Dispensary still stands on Independence Square, occupying the same building which was erected in 1801 and which, with slight modifications, serves for the 30,000-odd patients who pass through it annually. In New York City the New York Dispensary was established in 1790 and, unlike its Quaker brother, has passed from one building to another, enlarging as it moved. The third dispensary in the country was the Boston Dispensary, established in 1796 at a point on Washington Street, close to the corner of Court Street, on which the restaurant known as Thompson's Spa now stands. Those responsible for the establishment of the Boston Dispensary were familiar with the institutions in New York, Philadelphia and

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* By 1850 the number of dispensaries in London is said to have increased to 35. No reference is made here to dispensaries on the Continent. They do not appear to have affected the early development of dispensaries in the United States. In the latter part of the nineteenth century, foreign clinics, in which many American physicians studied, had substantial influence upon the procedures of medical education, and thus upon some of the dispensary movements described later.

London, as the following statement, prepared by a committee in September, 1796, bears witness:

"It having been found by experience both in Europe and in several of the capital towns in America, that dispensaries for the medical relief of the poor are the most useful among benevolent institutions, a number of gentlemen propose to establish a public dispensary in the town of Boston, for the relief of the sick poor; which they presume will embrace the following advantages:

"1. The sick, without being pained by a separation from their families, may be attended and relieved in their own houses.

"2. The sick can, in this way, be assisted at a less expense to the public than in a hospital.

"3. Those who have seen better days may be comforted without being humiliated; and all the poor receive the benefits of a charity, the more refined as it is the more secret."

The benevolent desire to help the sick poor thus appears in these quaint phrases as the primary motive leading to the establishment of this institution, and it was indeed the underlying and typical motive behind all the early dispensaries. The London system was followed in all the three earliest American dispensaries, requiring that patients be accepted only when recommended by subscribers, printed forms being furnished those contributing five dollars or more a year. In Boston, a subscriber might keep two patients under care for each five dollars annually contributed. The aim was to give the subscriber a spiritual return for his money as well as to insure "worthiness" in the applicant. That the "worthiness" of the applicant was emphasized, appears from the rule which was certainly followed in Boston and probably elsewhere, "That persons suffering from venereal disease or from the effects of alcohol should not be treated by the dispensary, as being the victims of their own sensual indulgence."

The early Boston Dispensary consisted merely of a drug store, and the physician was to be in attendance daily except Sundays. Ambulatory cases might see him there at 11 o'clock. Patients too sick to come for treatment were to be visited at their homes and to a certain extent these eighteenth century dispensary physicians saw patients at their private offices without charge. Almost the sole elements of expense in the early days were the medicines provided, and of these, at least at the Boston Dispensary, wines or spirits were the largest items among the treasurer's bills. The method of the early dispensaries was simply this: a poor patient had to have a letter from a subscriber, and must present this at the dispensary during the announced hours; or the letter of recommendation might be left by some friend or member of the family with the apothecary, so that the doctor should have the name and address, in order to call at the sick person's home. At first only one physician at a time was furnished. Dr. John Fleet, the first physician of the Boston Dispensary, for instance, treated 80 patients during the first year. As the city grew in size, more physicians were added and the city was divided, each physician seeing patients only within his own district.

In New York additional dispensaries were founded early in the nineteenth century, the Northern Dispensary (still in existence) in 1827, and the "Eastern Dispensary" in 1832. The city was then more or less equally divided between them. As the communities became larger, the earlier system of recommending patients through subscribers became increasingly inconvenient and was gradually given up. Dr. Oliver Wendell Holmes, a physician of the Boston Dispensary in 1837, complained in a letter to the Board of Managers that the physicians of the dispensary were practically compelled to secure tickets signed in blank by subscribers. The patients usually appealed to the physician in the first instance, and the rule requiring that they then go to the subscriber and secure a recommendation for treatment became merely vexations. The London dispensaries and the New York Dispensary had already established clinics on the modern principle by which the physician treats ambulatory cases at a given time and place, not in informal conferences at the apothecary shop. Thus the system of recommending patients by subscribers fell into disuse and was finally abandoned, and clinics as we know them today were developed. The Boston Dispensary started these clinics in 1856.

A new element which powerfully reinforced the charitable desire to help the sick poor appeared in the dispensary movement during the first part of the nineteenth century, namely, the interest of physicians in acquiring medical experience and in teaching medical students at a clinic. In connection with the Boston Dispensary students were allowed to attend patients almost from the beginning, as regulations governing the activities of students appear in the records as early as 1827. The development of clinical teaching in the latter part of the nineteenth century, instead of mere didactic instruction, has been one of the most powerful factors in increasing the number of dispensaries and improving their work. Oliver Wendell Holmes wrote a report to the Boston Dispensary in 1837, after he had been one of its district physicians, and urged the establishment of a clinic, saying:

"A consulting-room well attended is one of the most valuable schools for students, as well as practitioners of medicine, since many cases of disease may be seen within a very limited time; and, being thus collected, may be compared with and illustrate each other. This is one of the legitimate ends of all medical charities."

Very much more recently we see the charitable motive and the teaching motive balanced in the utterance of Sir William Osler, in his address at the opening of the new out-patient building of the Cardiff Hospital, in 1908:

"That an out-patient department is simply for the relief of the poor—the common idea—is to take an altogether too narrow view of its functions. . . . Of course the first and most important (function) is the relief of the poor. . . . In acting as the training school for the younger members of the profession, the out-patient department fulfills its second great function. . . . With sufficient staff, there is no reason why just as careful notes should not be taken in these rooms as in the wards; and let me remind the younger physicians in the audience that some of the most brilliant reputations in the profession of this country have been built up upon the solid foundation of notes taken in out-patient departments. Let me urge you to make ample provision for your medical students in the out-patient department, where they see the patients in their native state, so to speak, before they have been scoured and cleansed by the nurses in the ward."

The two motives we have thus analyzed, to do charity and to advance medical knowledge and education, are responsible for the establishment and development of probably a thousand dispensaries in the country today. During the last fifteen years, a new force or motive has supervened—from the public health field. Each of the chief militant public health movements of late years has led to the establishment of a number of dispensaries as part of its program to prevent, treat or control some disease or group of diseases. The movements to combat tuberculosis, infant mortality, mental disease, venereal disease, are instances in point, and about 1500 public health dispensaries have been founded as a result. From small beginnings, the dispensary movement has assumed much larger proportions in recent years. In 1800 there were three dispensaries in the United States. In 1900 there were about 100. The number is 25 times as great today.

THE RELATION OF THE DUCTLESS GLANDS TO GYNECOLOGY: PHYSIOLOGICAL AND THERAPEUTIC.*

BY ALICE H. BIGELOW, A.B., M.D., BOSTON.

THE present paper owes its origin to a burst of enthusiasm over an impressive and fascinating book on the ductless glands by Falta of Vienna, translated by Meyers of Philadelphia. I have tried to gather from its substantial pages the material which bears on gynecology, and to this I have added modifications and suggestions found in recent magazine articles by American authorities in the same line of research.

One by one, the organs comprising this system have been recognized as having some function other than their obvious ones; their removal or overactivity has caused symptoms uniform enough to lead to laws, till at last they have been grouped into a family of recognized standing. Some of them produce secretions that can be seen and recognized; and, in addition, other forces that are known only by their results. These latter are known as the internal secretions, or, better, by the picturesque Greek *hormones,* or messengers. They are passed directly into the blood stream, and hence are not seen at work, but are judged as to efficiency only as the goods they carry are, or are not, delivered. Adrenalin—product of the medulla of the suprarenals—is the only hormone that has been isolated.

The members of this glandular family are as follows: thyroid, parathyroid, thymus, pituitary or hypophysis (anterior and posterior lobes), pineal or epiphysis, ovaries and testicles, suprarenals (cortex and medulla), and the islands of Langerhans in the pancreas. The interaction of this chain of glands is amazing. Some work at the same time directly with some of the others and directly against the rest. Any given one will coöperate with some of its family and inhibit the others; or—to put it in familiar mathematical terms—vary directly with some, vary inversely with the others. Classification of their activities is based on their effect on metabolism. Some are acceleratory and, by hastening the body processes, make for katabolism. These are the thyroid, ovaries and testicles, posterior lobe of the pituitary, medulla of the adrenal. Others retard the constant breakdown of the tissues and so are classed as anabolic. These are the parathyroid, anterior lobe of the pituitary, suprarenal cortex, and probably thymus and pineal. To save this classification from being purely academic, look at a few familiar examples. The thyroid is classed as katabolic because it accelerates body processes; shown easily because its hyperfunction in goiter gives excitability and tachycardia. In this katabolic class is placed also the medulla of the adrenals. It excites the sympathetic system and breaks down glyocgen, hence the fleeting glycosuria of students in examination, and soldiers going up for medical inspection. In the anabolic class is placed a substance now in the white light of scientific inspection,—that of the pancreatic islands of Langerhans. It is known to conserve glycogen; and, when on strike, to lose it; hence the charge laid upon it of a share in the diabetic process. The reader of this classification notes, perhaps with surprise, that portions of some of the organs named work at variance with each other. We cite the anterior and posterior lobes of the pituitary and the cortical and medullary parts of the suprarenal.

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* Read before the New England Women's Medical Society, April 18, 1918.

The ductless gland system is supplied chiefly by the sympathetic nervous system, and its nervous influence is, in turn, mostly upon the sympathetic system. The hormones tend to accelerate the sympathetic nerves, and each shows predilections for special nerves—the most familiar affinity being that of the posterior lobe of the hypophysis for the innervation of the uterus. The increase in the general vitality of the individual at the time of ovulation, especially if the ovum become fertilized, is set down as a sympathetic stimulus by the internal ovarian secretion; and the vasomotor disturbances of the menopause are laid to the loss of the same regulating hormone. The so-called climacteric changes that sometimes occur in the male are placed in the same class.

The last general remark concerning this system regards its determining relation to the general make-up—to avoid the more subtle term "diathesis"—of the person. Where the sympathetic nervous system is sluggish, there the activities of these glands are minimized, and we find an asthenia, with sluggishness of most of the organs, enteroptosis, and constipation. With an irritable sympathetic system we are apt to find definite manifestations of glandular activity, such as swelling of the thyroid with pregnancy, almost amounting to Graves' disease, to short and sudden changes in body weight, to functional dysmenorrhea. For those in whom the balance throughout this system is well maintained, the author reserves the happy phrase, "enviable equilibrium."

I will now deliberately narrow the field to the influence of these interesting glands upon conditions of a gynecological nature, with the object of deducing, later, some practical therapeutic conclusions.

An important and complicated relation of these glands is with the secondary sex characteristics. These are accepted as meaning all differential points of sex anatomy and physiology except those immediately concerned with reproduction. Attention was first called to this relation by the obvious body changes following castration and oöphorectomy. Bodies other than the testicle and ovary are now known to share in determining these characteristics.

To begin with the less important members of the series, we may make a few interesting notes. First: that the parathyroids control nerve and muscle activity to such a degree that their inactivity is now held responsible for many forms of tetany, especially that which occurs in pregnancy. Administration of the gland, however, has not cured the condition, leaving the theory still in laboratory form. Second: that the thymus, largest at birth, atrophies at puberty. Its function seems to vary indirectly with sexual activity, because it ceases to act when this begins and, on the other hand, in eunuchs it is large and presumably active. In the condition of acromegaly, caused by hyperfunction of the pituitary, external sex markings are exaggerated. Body hair becomes heavy and profuse, virile in women, and the external genitalia are hypertrophied. Colostrum sometimes appears. Menstruation and conception may or may not take place. Conversely, with hypofunction of the pituitary, we find a loss of body hair, an increase of fat which blurs the characteristic body outlines of sex, and a retrogression of sex functions and glandular tissue. In the female dwarf, when the cause lies in the pituitary, we find, as we should expect, infantile genitalia and amenorrhea.

The more familiar thyroid is placed physiologically in the class with the ovary; but the neat classification which we are tempted to make, of excessive menstruation on the one hand, and amenorrhea on the other, according as the gland is over- or under-active, is not supported by clinical facts. Everyone admits that thyroid disturbance shows in menstrual phenomena. Osler says that there is no uniformity in the menstrual disturbance as to regularity or amount. In some instances the thyroid is known to vary directly with pelvic activity, when it enlarges during pregnancy and with the periods. Novak of Baltimore says of it that, taken by and large, menstruation is more apt to be scanty or absent with thyroid hypertrophy in Graves' disease, and increased by its atrophy in myxedema. Hence we must add thyroid disturbance to our list of causes for amenorrhea as we meet it clinically. That list stands as follows: pregnancy, menopause, anemia, recent immigration, tuberculosis. If we bear the thyroid in mind, we may find an obvious goiter and its syndrome of tachycardia and tremor, or a myxedema, with dry, shiny, hairless skin, and a bloated body outline. In the latter case thyroid extract by mouth tends to act with charming accuracy.

An allied form of functional amenorrhea is due to pituitary insufficiency. These patients are frankly fat, often distressingly obese. The condition staggers under the technical description of "adiposo-genital dystrophy," or Froelich's syndrome. We are accustomed to associate obesity with amenorrhea. Once its relation was supposed to be causal; now both are known to reach back to some deeper cause common to both. This discovery has put a ban on the emmenagogue drugs, which can cause only pelvic congestion and distress, and thrown the thoughtful physician back on the logical use of gland tissue. Administration of the pituitary body itself has not helped much, but the thyroid gives a reliable preparation which is favored by Novak in conditions where the pituitary is deficient, as well as the ovary or the thyroid itself. He considers thyroid extract the safest and most stable gland preparation, and uses it in doses of gr. V a day, watching for tachycardia, tremor, or serious loss of weight. Sometimes he supplements it with corpus luteum.

Before discussing the ovary as a ductless gland, one statement must be made as a summary of the foregoing, namely, that the ovary is a less important member of the family than has been supposed, and owes much to its coadjutors, the thyroid and portions of the adrenals and pituitary.

Even more recent and precise than the work we have been reviewing is the research on the ovary published by Graves of Boston in the *Journal of the A. M. A.* of Sept. 1, 1917. He begins with a frank statement of the facts concern- the ovary which we should like to know and don't; its relation to menstruation; the relation, in turn, of menstruation to ovulation; the function of the internal secretion, whether it be direct or only regulating; the portion of the ovary creating that subtle product; and the very reasonable question as to whether there may not be two of these products.

That the corpus luteum does make an internal secretion is so generally accepted that it is called by many "an organ of internal secretion." This phrase, Dr. Graves points out, is histologically inaccurate, because the secreting cells of the corpus luteum are duplicated in cells scattered throughout the body of the ovary and known as the interstitial cells. Hence he argues that the entire ovarian tissue takes part in producing the hormone; and because ovarian activity is seen in youth, before the corpus luteum is mature, it seems likely that the primary source of the secretion lies in the interstitial cells rather than the special cells usually credited with it. The similarity of these interstitial cells to the cells of Leydig in the testicle, which is admitted to have its own hormone, is another argument against the exclusive activity of the corpus luteum.

He has not found therapeutic preparations of the corpus luteum stable or uniform because made during different stages of its life. They have been inert on the one hand, and toxic on the other, giving nausea for a week or more. Preparations from the whole ovary, however, have been found more reliable and have given good results, especially when taken from a pregnant animal. He has used them successfully in the vasomotor disturbances of the menopause, natural and artificial; in functional amenorrhea; in amenorrhea of thyroid origin; menstrual headache; kraurosis, and senile pruritus. Success with kraurosis is interesting because it supports the theory that the interstitial cells are the trophic control for the genital tract.

Armour's preparation of the whole ovary in five-grain capsules was the form used.

Dr. Graves' contribution consists in shifting the emphasis of value from the corpus luteum to the cells in the body of the ovary, and he has supported his theory still further than the above description by giving ovarian preparations with the corpus luteum excluded, with results as satisfactory as those procured by the whole organ.

Reflection on these considerations seems to urge the physician who handles many women to look at the pelvis no less carefully, but to look also at the patient as a complicated whole; to avoid chemical interference with body processes of an origin deeper than we used to think; to listen at the laboratory door for suggestions as to how we may catch nature at work and imitate her. If, as teachers of women, we can attack the ancient tradition that centers their thought of themselves too strongly in the pelvic organs, we shall help them greatly toward that happy condition, named adequately by Falta an "enviable equilibrium."

Book Reviews.

A Text-Book of Organic Chemistry. For Students of Medicine and Biology. By E. V. McCollum, Ph.D., Professor of Agricultural Chemistry, University of Wisconsin. New York: The Macmillan Company.

In a comparatively brief work, though not approaching the meagerness of the Quiz Compends, the author has attempted to present the subject of organic chemistry for students of medicine and biology. Beginning with the simplest of the organic compounds, consisting of two elements only, he has built up the more complicated structures much as a child builds houses from blocks.

The subject of isomerism, that "pons asinorum" of all medical students, has been treated by the author in a new and rather novel way, which ought to deprive the subject of some of its difficulties.

The alcohols, ethers and esters are considered largely from a purely scientific standpoint, with very little reference to their enormous importance in biochemistry. It would seem only fair that a work which assumes to be adapted to medical students, should at least show more intimately the relation between organic chemistry and medicine, and not leave it to the reader to make these inferences and draw his own conclusions. Then, again, much material has been included which has little or no relation to medicine and biology. Whether the persistent, continuous use of formulae in place of verbal explanation is a desirable one for young students will still remain somewhat in doubt. No laboratory work is included, and the perusal of this work for the acquisition of knowledge would be about as interesting as the perusal of Webster's Unabridged.

On the whole, apart from its brevity, it does not seem to be any improvement over the numerous other works on organic chemistry which do not contain this special appeal to devotees of medicine and biology.

The Sex Complex. By W. Blair Bell, B.S., M.D., Lond. New York: William Wood and Company.

According to its sub-title, this monograph, based on the author's Arris and Gale lectures of 1913, is "a study of the relationships of the internal secretions to the female characteristics and functions in health and disease." It aims to demonstrate "that the reproductive functions are directed and controlled by all the organs of internal secretion acting in conjunction, rather than by the gonads alone, as formerly thought." This correlation of the internal secretions with regard to the sex functions is indicated by the term "sex complex."

The work is divided into two parts, the first dealing with morphologic, physiologic, and psychologic; the second with pathologic considerations. The author discusses successively the primary and secondary female sex characteristics, the function of the ovaries, and the relations of the thyroid, pituitary, suprarenals, and pancreas to the genital system. The outbreak of the European War prevented the completion of work on the parathyroids, pineal, and thymus, which are, therefore, but briefly considered. The second part deals clinically with derangements in the structural and functional development of the genital organs and of the fully established female characteristics and functions, as well as with sexual and reproductive psychoses and neuroses. An appendix states briefly the physiological effects of extracts of the endocritic organs. The volume is a valuable contribution to the philosophy of their action.

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MEDICAL SECTION OF THE COUNCIL OF NATIONAL DEFENSE.

The recent visit to Washington for the Conference of the Council of National Defense, Medical Section, so impressed the seven members of the Massachusetts State Committee who attended it, that a few words regarding it may not be out of place.

To those who had not seen it before, the sight of the whole country at work, and at top speed, was indeed inspiring. From Boston to Baltimore a long double line of factories, foundries, munition plants and shipbuilding establishments cover the land, having sprung up over night and still growing; the train passes between two unending rows of them, like battalions of a far-flung army. Throughout the twenty-four hours the hundreds and hundreds of thousands of workers toil within them; they are literally pillars of smoke by day and of fire by night.

Washington itself is transformed. One hundred and fifty thousand men and women have been added to its normal population. Everywhere are new buildings, offices and barracks. Seventeen thousand are working for the Council of National Defense alone: men who have come from every corner of the country. They have given up business, family and salary—no, not all salary, for though they never limit themselves to an eight-hour day, they are paid one dollar a year by the Government. They are lawyers, bankers, business experts, men of affairs, chemists, engineers, professors, doctors and social workers. And their spirit is only the index of the spirit of the country at large: they have forgotten previous miscalculations or misconceptions, working with all their strength and mind and enthusiasm for one great end.

The meeting of the State Committees brought doctors from every State in the Union, from Maine to the Gulf, and to the Pacific Coast. Immediately after the roll call, the impressive oath of allegiance to the United States was administered to all present. Every fact of present importance, as well as outlines of essential plans for the future, were then laid before us by various heads of departments and other high officials. All the innumerable reports and addresses may be summarized from our standpoint in one sentence—"More doctors, more doctors, more doctors, for the Army, Navy and Public Health Service." There is no limit set to this number, as Secretary Baker recently said in relation to the fighting men.

As a result of all that was presented on Saturday and Sunday, May 4 and 5, it is obviously the ideal thing at this moment that every doctor in the United States who is not yet fifty-five, should offer his services to the country *now,* and without reference to institutional or to community needs. If every one of the one hundred thousand of these men would at once apply for and accept a commission, the entire complex and urgent problem of the future medical needs of the fighting forces would vanish into thin air. The War Department could then, with advice and counsel, call immediately those whom it most needs; and assign the others, at least for the present, to local and imperative civil positions and tasks, often to continuing to do what they are and have been doing; and if any of those accepting commissions desire immediate service, a personal request to the Surgeon-General will secure it within a few hours. This is the ideal!

However, if this universal medical service must yet be held a short time in abeyance, at the very least every doctor who can possibly go into service should apply at once; now is the acceptable time; fifty-five years is still the limit as to age. But it must be remembered that the best and fairest flowers of the over fifty group have already been culled; they are at this moment working twelve hours a day, and more, in France, bearing as uncomplainingly as the fighting man their share of rain and cold and mud; or they are stationed at the various posts and camps throughout these States, doing their allotted tasks quietly and effectively. It is obvious that a considerable majority of the *five thousand* now urgently needed must be under fifty, since these are the ones who can most easily withstand the army work. Massachusetts' immediate minimum quota is *three hundred and sixty*, but in reality she should send, and send at once, at least *five hundred.*

It has not been the tradition of Massachusetts in the past to range herself in the rear rank when patriotic duty is demanded. And in this war she has done, as usual, more than her share in sending fighting men to the ranks; and has contributed more than her allotment of dollars to Liberty Loans, to the Red Cross funds, and to the other numberless appeals for works of humanity and mercy. Shall it be said that in medical loyalty alone she remains behind? That the most merciful of the professions, to whom the call came first of all, is still backward? It may be true that at present Massachusetts need not hang her head in deep shame over either the number or the quality of the doctors she has given, but it is also true that she cannot hold it proud and high, for until now she has done in this field but a scant and cautious duty. It is not the habit of Massachusetts to allow thirty other States to precede her in volume of public service, yet today she stands thirty-first in the proportion of doctors sent to the war. This must not and shall not be! Let every man who can possibly do so apply for a commission at once; let them come in such numbers that before the great holiday in the first week of July arrives, Massachusetts shall have abandoned her present position of rear guard, and in her loyalty to the care of the fighting man shall have assumed once more the place which she has always before held; the only place appropriate for one of the original American colonies—the place at the head of the column, among those who lead by action and by example; one of the elect, the chosen Twelve Apostles of the States.

At a dinner given at the Army and Navy Club, to the States Committees, Dr. William Williams Keen, past his eighty-first birthday but dressed in khaki, made a speech so fired with patriotism and eloquence, that it might well be repeated at every medical meeting in the country. He used a singularly beautiful figure, "the inspiration of disaster." He referred obviously to Russia, the small nations, and the Western drive. He said in substance:

"We have felt and have known the 'inspiration of disaster'; our eyes and our ears are opened; it now remains for us to resolve and determine with every ounce of our strength, and every power of our being, that no sacrifice is too great, no effort too intense, to wipe out completely all that now intervenes between us and ultimate, adequate victory."

Physicians of Massachusetts, come forward!

MASSACHUSETTS STATE COMMITTEE
OF NATIONAL DEFENSE.

REST IN CARDIAC INSUFFICIENCIES.

PERHAPS the only therapeutic measure that is applicable to all forms of cardiac insufficiency or in cardiac decompensation, with equal value, is rest—generally absolute rest in bed. In fact, no other form of treatment is of any avail unless accompanied by rest in bed. Heart stimulants administered to such patients who are not at rest can do more harm than good. In acute decompensation the rest must be absolute, no matter how long it takes for compensation to reassert itself. In individuals in whom a break in compensation is imminent or where recovery from decompensation has just occurred, the rest treatment need not be so absolute, but can consist merely in total abstinence from all forms of work or fatiguing activity or exercise. Rest is intended to diminish the burden on the heart merely to that necessary to keep the circulation alive; it must not be used for the added needs of circulation during activity. With rest properly maintained, no other form of treatment is usually necessary. In children rest may have to be maintained for months, and for a very long time after compensation has again been established. In children, rest in bed serves the double purpose of reëstablishing compensation and preventing recurrences of the acute disease the basis of the cardiac condition. In the aged, the question of maintaining absolute rest over long periods when there is myocardial degeneration is a mooted one. Of course, there is the objection of encouraging the production of hypostatic congestion in the lungs. Moreover, the lack of any exercise in aged myocardial cases may encourage further degeneration of the heart muscle. Yet, in any case, it is probably better to err on the side of too much rest than too little of it. Much of the danger of too little exercise may be overcome by passive exercise, resistance exercises and massage. The time for these exercises, the quality and the amount must be determined in each case. In the very acute decompensations not even these indications for keeping up the nutrition of the heart and the circulation can be carried out. For severe cases long rests periodically are absolutely necessary, and although this is making of these patients chronic, helpless invalids, it is the only way of keeping them alive and comfortable. Where climatic conditions are good, the rest treatment maintained out of doors is much more pleasant than elsewhere. The amount and quality of rest forced upon young cardiacs will often determine their future behavior toward cardiac insufficiency. The essential difference between the normal heart and the heart with decompensation is in the reserve force. Normal hearts have little actual force but a great deal of reserve force; abnormal hearts have much actual force and little reserve force. The latter need much actual force to drive the impeded blood current. Prolonged rest treatment will increase this reserve power so that it will be there to act when called upon, instead of, in the absence of sufficient reserve power, a break in compensation resulting from the extra burden put on the heart.

THE ARIDITY OF HEATED ROOMS.

High atmospheric temperatures are better tolerated, within limits, as the relative humidity of the atmosphere is lower. That this is so is due to the fact that evaporation from the skin is in inverse proportion to the degree of humidity. On the other hand, an over-dry atmosphere, where the relative humidity is very low, is extremely irritating to the mucous membranes and encourages catarrhal affections. Very dry atmosphere on the outside brings with itself, of course, dust, which adds to the irritation. Heated rooms in which there is an inadequate provision for ventilation are most likely to suffer from an artificial aridity. This occurs at any time when there is no replenishment of the moisture used up by the heating appliances. In the very poor homes, where the problem of heating is a difficult one because of the money outlay or from fuel shortage, perhaps but one room is heated, and superheated, and no provision is made for ventilation because it is not desired to waste any of the heat. Both the temperature and the atmospheric dryness are likely to be excessive. The tendency to catarrhal affections under these circumstances is illustrated by statistics that show that catarrhal affections and pneumonia increase during the months of artificial heating and lessened ventilation. The connection between pneumonia and adverse atmospheric conditions of heated rooms is suggested by the benefit obtained in the treatment of pneumonia in the open air, even when the temperature is very low.

The weather bureau (Topeka, Kansas, 1909-1910) pointed out that in winter, steam-heated offices with good ventilation maintained at an average temperature of 72° F., had an average relative humidity, as determined by the whirling psychrometer, of 23%. At the same time the outdoor humidity was 82%. The average relative humidity of Death Valley, California, in the summer of 1891, was 23%. In such well-known arid places as Yuma, Arizona; Santa Fe, N. M.; Pueblo, Col., the average relative humidity, even during the dryest seasons, did not exceed 35, 29, and 38%, respectively. Indoor heating during the winter can make the air drier than a desert, and there is small wonder that catarrhal conditions in Northern cities are almost universal. Besides proper ventilation of heated rooms and the regulation against overheating, it is necessary to replenish in some method the moisture taken up by heating, otherwise places become not only uncomfortable but render the occupants likely to catarrhal conditions. The work of the New York Board of Health for the encouragement of open windows during the winter has done much to reduce the incidence of pneumonia.

LOW PULSE PRESSURE.

While a great deal of attention is justly paid to high blood pressure, its causes, prevention and treatment, the possibility of low blood pressure being a pathological factor is often quite overlooked. Low pulse pressure is an important and cardinal element in mitral insufficiency after severe infectious diseases as well as after severe hemorrhage, but may occur irrespective of either of these conditions, and is always a difficult condition with which to cope. Low pulse pressure of the idiopathic type is most frequently associated with inanition, asthenic conditions, neurasthenia, and the pretubercular state. Just exactly what is the basic condition in low pulse pressure—hyposphyxia—is difficult to say. In the light of the newer studies into the functions of the glands of internal secretion—the endocrinous system—it is quite likely that low blood pressure has much to do with some disturbance in this system. The whole vasomotor control and the nutrition of the blood vessels is under the control of the sympathetic nervous system, which, in turn, is very closely associated with the glands of internal secretion. With the lowered blood pressure there is a diminished arterial output, general circulatory sluggishness and venous stasis. Failure of general body nutrition and deteriorative physical and mental effects are the end-results. There is diminution in all body secretions, lessened blood-making powers and an increase of the blood viscosity, although there is a lowering of the hemoglobin content. The failure of digestion is the natural consequence of the diminished digestive secretions. All these conditions are more often exemplified in the obese, pale and flabby type of individual. It is the same type in whom disturbance of the glands of internal secretion, especially of the pituitary, is commonly met.

The indications for treatment are not so much the increase of blood pressure, as an attempt to remedy causes when possible. Naturally, organotherapy has received a great deal of attention. Not merely the pituitary gland, but the thyroid, ovarian and epinephrin extracts have been tried. Pluriglandular treatment is often better, no matter if the particular gland disease can be localized, because of the close relationship of the whole system. When there is disturbance in one, all the others of the system are likely to be affected. Improvement in the general mode of life, the administration of appropriate stimulants, tonics and hematinics are important elements of treatment. Massage and gradually increased exercise not only benefit muscular tone but, by helping to empty the blood vessels in the muscular tissues, improve the general circulation.

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NAVAL RESERVE NEEDS MALE NURSES AND PHARMACISTS.

There are several desirable openings in the Hospital Corps of the United States Naval Reserve Force for men between the ages of 18 and 28, who are citizens of the United States. Young men who desire to take up a calling where a satisfactory wage is obtained immediately and where there is every opportunity for advancement, instruction, education, and pleasant duty, or who contemplate the study of nursing or other allied subjects, are invited to consider the Hospital Corps as a field for employment or elementary training. Graduates of training schools for nurses of hospitals, or men who have served as attendants in hospitals, or in institutions, and pharmacists, will find in this branch of the naval service an opening to pursue their chosen profession with added training and inducement. Referring to the duties in brief: hospital corpsmen act as nurses to the sick, administer first aid to accident cases, assist at surgical operations, care for the medical stores and property, compound medicines, and attend to the clerical work of the department. For enrollment in the Hospital Corps, U. S. Naval Reserve Force, apply in person at the office of District Medical Aide, Room 1210, Little Building, Boston, Mass.

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MEDICAL NOTES.

Result of Vaccination against Pneumonia.—At the opening session of the American Society for Clinical Investigation, Atlantic City, N. J., Dr. Russell L. Cecil, of the Rockefeller Hospital, New York, announced that the adoption of prophylactic vaccination had reduced the number of cases of pneumonia in a military camp to seventeen among twelve thousand vaccinated, as compared with one hundred and seventy-three cases among nineteen thousand men who had not been treated with the serum.

The Illegitimate Baby's Rights.—The rights of illegitimate children and the State's responsibility for seeing that every child, no matter what his parentage, has the nurture, protection, and education essential to his usefulness as a citizen, are for the first time given complete national recognition in the Norwegian laws concerning illegitimate children, accordig to a report issued May 23, by the Children's Bureau of the U. S. Department of Labor.

These laws make the State instead of the mother responsible for establishing paternity. The State holds both parents equally and continuously responsible for the illegitimate child: "The child shall be entitled to bringing up—maintenance, training, and education—from both its father and its mother." The report contains a translation of the several Norwegian laws, with amendments, on illegitimate children and their care. A history of the efforts through which the legislation was secured is given in the introduction.

The attitude which looks upon illegitimacy as a child-welfare problem that must be solved for the sake of the child and of the State is exemplified by this Norwegian legislation. In connection with its studies of the bearing of the war upon child welfare, the Children's Bureau examined the evidence obtainable but could not find that it justified the statements that have been circulated of widespread increase in illegitimacy since the war. The Bureau believes, however, that the needs of the illegitimate child must be considered in the Children's Year campaign "to save 100,000 children's lives during the second year of the war and to get a square deal for children." In the Children's Year Working Program attention is called to the necessity of providing opportunity for normal development to the child of unmarried parents.

Red Cross Week.—President Wilson has issued a proclamation designating the week beginning May 20 as "Red Cross Week." The American people are earnestly called upon to contribute generously to the second $100,000,000 war fund of the American Red Cross, for the alleviation of suffering among both the American and Allied troops in France and the civilian population at home and in the Allied countries. By this means, not only will it be possible to continue the important work of relieving distress, but it will also assist in maintaining the morale of our own troops and the troops and people of our Allies, "by this manifestation of effort and sacrifices on the part of those who, though not privileged to bear arms, are of one spirit, purpose, and determination with our warriors."

WAR NOTES.

Appropriation for Army Needs.—The War Department has asked Congress to appropriate $33,000,000 to provide for the medical necessities of the new forces about to be assembled under the new draft.

Health of the Army.—Health conditions in the army posts and training camps in the United States showed a marked improvement during the week ending May 3. All sick rates continued to decline, with the exception of measles. The total number of deaths was 188, compared with 251 the week before.

War Relief Funds.—On May 18, the totals of the principal New England War Relief funds reached the following amounts:

Belgian Fund	$671,205.28
French Wounded Fund	361,996.34
Armenian-Syrian Fund	305,123.97
French Orphanage Fund	179,066.91
Italian Fund	170,737.46
British Imperial Fund	119,645.67
LaFayette Fund	36,351.29

Incidence of Venereal Disease in the American Army.—An unofficial report from France on May 12, attributes to Major Hugh H. Young a statement that among the American Expeditionary Forces now in France, the incidence of venereal diseases thus far, requiring hospital treatment, has been only one-tenth of one per cent. This figure is considerably lower than was expected or than has been suggested by earlier reports, but it is to be remembered that the first statement is not necessarily authentic or authoritative.

BOSTON AND MASSACHUSETTS.

South Essex Medical Society.—At the annual meeting of the South Essex Medical Society, ex-Lieutenant Governor Grafton D. Cushing described conditions in France. Dr. James J. Egan, of Gloucester, was elected president for the coming year; Dr. Carolus M. Cobb, Lynn, vice-president; Dr. Hamlin P. Bennett, Lynn, secretary; and Dr. George Z. Goodell, Salem, treasurer.

Week's Death Rate in Boston.—During the week ending May 11, 1918, the number of deaths reported was 234, against 278 last year, with a rate of 15.86, against 18.77 last year. There were 42 deaths under one year of age, against 39 last year.

The number of cases of principal reportable diseases were: diphtheria, 64; scarlet fever, 40; measles, 385; whooping cough, 63; typhoid fever, 3; tuberculosis, 94.

Included in the above were the following cases of non-residents: diphtheria, 10; scarlet fever, 8; measles, 3; tuberculosis, 14.

Total deaths from these diseases were: diphtheria, 1; scarlet fever, 2; measles, 8; whooping cough, 5; typhoid fever, 1; tuberculosis, 34.

Included in the above were the following non-residents: scarlet fever, 1; tuberculosis, 6.

Smallpox: 2 cases for week, both residents of Boston.

The Massachusetts Medical Society.

Notice of Removal.—On May 22, Dr. Walter L. Burrage, Secretary of The Massachusetts Medical Society, removed from 282 Newbury Street, Back Bay, Boston, to 42 Eliot Street, Jamaica Plain, Boston, between Center Street and Jamaica Pond Parkway. Telephone, Jamaica 469.

NOTES FROM THE DISTRICT SOCIETIES.

District Correspondents.

Berkshire, A. P. Merrill, M.D., Pittsfield.
Bristol North, Arthur R. Crandell, M.D., Taunton.
Bristol South, Edwin D. Gardner, M.D., New Bedford.
Essex North, T. N. Stone, M.D., Haverhill.
Essex South, H. P. Bennett, M.D., Lynn.
Hampden, Laurence D. Chapin, M.D., Springfield.
Hampshire, E. E. Thomas, M.D., Northampton.
Middlesex South, William C. Hanson, M.D., Belmont.
Norfolk South, Daniel B. Reardon, M.D., Quincy.
Plymouth, Alfred C. Smith, M.D., Brockton.
Worcester, Ernest L. Hunt, M.D., Worcester.

Worcester District Medical Society.—Officers elected for 1918-1919: President, Dr. W. L. Johnson, Uxbridge; vice-president, Dr. William J. Delahanty, Worcester; secretary, Dr. George A. Dix, Worcester; orator, Major Kendall Emerson, M.R.C., Worcester. Committee on Funds, Dr. O. H. Everett, Worcester; Dr. Homer Gage, Worcester; Dr. David Harrower, Worcester. Commissioner of Trials, Dr. George F. O'Day, Worcester.

Councilors: Dr. W. P. Bowers, Clinton, president; Dr. Frank Clapp, North Grafton; Dr. J. O. Genereux, Webster; Dr. Albert G. Hurd, Millbury; Dr. W. L. Johnson, Uxbridge, vice-presidents; Dr. F. H. Washburn, Holden; Dr. F. H. Baker, Worcester; Dr. William J. Delahanty, Worcester; Dr. John T. Duggan, Worcester; Dr. Michael F. Fallon, Worcester; Dr. Homer Gage, Worcester; Dr. R. W. Greene, Worcester; Dr. David Harrower, Worcester; Dr. G. O. Ward, Worcester; Dr. S. B. Woodward, Worcester; Dr. C. D. Wheeler, Worcester; Dr. E. L. Hunt, Worcester. Councilor on Nominations: Dr. David Harrower, Dr. John T. Duggan, Alternate.

Censors: Dr. F. H. Washburn, Holden, supervisor; Dr. W. C. Seelye, Worcester; Dr. J. J. Cummings, Worcester; Dr. Alexander McNeish, Leicester; Dr. Andrew E. O'Connell, Worcester. Auditing Committee: Dr. A. W. Atwood, Worcester; Dr. Anna Murphy, Worcester; Dr. E. W. Barry, Whitinsville. Librarian: Dr. George C. Lincoln, Worcester; Dr. A. C. Getchell, pro tem. Library Committee: Dr. John F. Curran, Worcester; Dr. Peter A Colberg, Worcester; Dr. John A. MacFayden, Worcester.

Nominating Committee: Dr. P. H. Cook, Worcester, chairman; Dr. William F. Lynch, Worcester; Dr. G. F. H. Bowers, Worcester; Dr. M. B. Fox, Worcester; Dr. C. A. Sparrow, Worcester.

Revised List of Physicians from Worcester District in Military Service of the United States or the Allies:

Medical Officers' Reserve Corps, United States Army, on active duty:

Beal, Howard, Worcester.
Bigelow, Edw. B., Worcester.
George, Frank W., Worcester.
Kinnicutt, Roger, Worcester.
Simmons, E. B., Worcester.
Denning, William E., Worcester.
Lemaire, Willard, Worcester.
Goodwin, James J., Clinton.
Beckley, Chester C., Lancaster.
Schofield, Roger, Worcester.
Lincoln, Merrick, Worcester.
Lincoln, George C., Worcester.
Phelan, E. F., North Brookfield.
Newton, R. S., Westboro.
Fay, William J., Worcester.
Yoosuf, A. K., Worcester.
*May, James V., Worcester.
Gwynne, Samuel C., Worcester.
Cahill, Harry P., Worcester.
Lurier, Israel, Worcester.
Gilfillan, Donald, Worcester.
O'Connor, D. F., Worcester.
Gage, Homer, Worcester.
Thom, D. A., Worcester.
Emerson, Kendall, Worcester.
Harriman, Frank E., Worcester.
Lewis, Elisha S., Princeton.
Ledbury, J. W., Uxbridge.
MacIntire, W. A., Worcester.

Oberg, Frank T., Worcester.
Simmons, H. I., Worcester.
Stapleton, Willard P., Worcester.
Watt, George, Worcester.

Commissioned but not yet called to active duty:

Little, George T., Uxbridge.
Salmon, Charles, Worcester.
Bridgewood, David, Worcester.
Berry, Gordon, Worcester.

Staff Officer 104th Infantry:

O'Connor, Joseph, Worcester.

United States Navy:

Haigh, Gilbert, Worcester.
Johnson, Linwood, Worcester.
Courtney, Thomas, Worcester.
Lannois, Joseph L., Northboro.
Adams, Winthrop, Worcester.

Massachusetts State Guard:

Shea, Peter O., Worcester.
Woodward, L. F., Worcester.
Sparrow, C. A., Worcester.
Ward, Roy J., Worcester.
Magune, Frank L., Worcester.
Bowers, George F. H., Worcester.
Mackay, Edw. H., Clinton.

English Army (Harvard Unit).

†Emerson, Kendall, Worcester.
Stansfield, Oliver, Worcester.
Bridges, Stanley, Worcester.
†Watt, George, Worcester.

English Hospitals:

Raymond, Albert O., Worcester.
MacKay, William H., Worcester.

United States Selection Service (Local Boards):

Austin, James C., Spencer.
Balmer, Edw. W., Whitinsville.
Barnes, J. Arthur, Worcester.
Bryant, Frederick, Worcester.
Harkins, John F., Worcester.
Hunt, Ernest L., Worcester.
McKibben, William W., Worcester.
McCrea, A. J., Southbridge.
Tobey, George L., Clinton.

Medical Advisory Board, District 15-A:

Baker, F. H., Worcester, *Chairman.*
Burley, B. T., Worcester, *Secretary.*
Wheeler, C. D., Worcester.
Harrower, David, Worcester.
Cook, Philip H., Worcester.
Delahanty, William J., Worcester.

District 15-B:

Watkins, R. P., Worcester, *Chairman.*
Cook, Philip H., Worcester, *Secretary.*
Miller, Lester C., Worcester.
Church, C. A., Millbury.
Estabrook, C. T., Worcester.
Mason, B. H., Worcester.

District 16.

French, C. L., Clinton, *Chairman.*
Morse, Irene M., Clinton, *Secretary.*
Scribner, E. V., Worcester.
Barton, J. A., Fitchburg.
Abbott, Charles R., Clinton.

Additional Examining Physicians (Advisory Boards):

Leland, L. P., Worcester.
Williams, F. R., Worcester.
Hartnett, Henry, Worcester.
O'Day, George F., Worcester.
Fox, M. B., Worcester.
Shannahan, R. J., Worcester.
Little, George T., Uxbridge.
Emery, George E., Worcester.
Ward, R. J., Worcester.
Rice, John E., Worcester.
Washburn, F. H., Holden.
Cooper, Edward, Worcester.
McClusky, Henry L., Worcester.
McSheehy, T. C., Worcester.
Power, George A., Worcester.
Dolan, William, Worcester.
Brown, George C., Worcester.
Kennedy, J. T., Worcester.
McDonald, J. W., Worcester.
Rochette, E. C., Worcester.
Cahill, J. W., Worcester.
Croissant, Charles, Worcester.
Wheeler, Alfred A., Leominster.
Chase, G. L., Clinton.
Currier, W. E., Leominster.
Shaughnessy, T. A., Leominster.
Brigham, Charles, Leominster.
Griswold, Merton L., Uxbridge.

Additional Examining Physicians (Local Boards):

Marsh, Arthur W., Worcester.
Hill, George H., Worcester.
Gilman, Warren R., Worcester.
Sparrow, C. A., Worcester.
Cross, Albert E., Worcester.

American Ambulance (Paris):

Clark, W. Irving, Worcester.

The Medical War Committee invites information to supplement or correct this list. Doctors joining the Colors should notify the Committee and indicate their wishes with regard to sharing the fees derived from their patients.

Ernest L. Hunt, *Secretary.*

* Honorably discharged. † Now in U. S. Army.

Miscellany.

CONVOCATION AND FOUR-DAY SCHOOL OF PUBLIC HEALTH.

Boston, May 28, 29, 30, 31, 1918.

The Convocation and Four-day School of Public Health will be held under the auspices of the Committee on Public Health of the Massachusetts Medical Society, with the endorsement and coöperation of the State Department of Health, the Massachusetts Association of Boards of Health and the United States Public Health Service.

PROGRAM.

Tuesday, May 28.

MORNING.

Session on Water and Sewage Purification.
At Huntington Hall, 491 Boylston Street, Boston.

9.05 "Purification of Water by Storage." M. C. Whipple, Instructor in Sanitary Chemistry, Harvard University.

10.05 "The Control of Water Supplies." Harry W. Clark, Director and Chemist of the Division of Water and Sewage Laboratories, State Department of Health.

11.05 "Sewage Disposal for Residences." Prof. Robert Spurr Weston of Messrs. Weston & Sampson, Consulting Sanitary Engineers, and formerly Assistant Professor of Public Health Engineering, M. I. T. *Stereopticon.*

12.00 Addresses of welcome from: Dr. Enos H. Bigelow, Chairman of the Committee on Public Health of the Massachusetts Medical Society; Dr. Samuel B. Woodward, President of the Massachusetts Medical Society; Dr. Eugene R. Kelley, State Commissioner of Health; His Honor, Andrew J. Peters, Mayor of the City of Boston, and His Excellency, Hon. Samuel W. McCall, Governor of the Commonwealth. These addresses will be followed by a roll-call of cities and towns represented.

AFTERNOON.

Session on Public Health Laboratory Methods.

At Huntington Hall, 491 Boylston Street, Boston.

2.05 "The Present Status of Pneumococcus Type Determination." Miss Edith A. Beckler, S. B., Bacteriologist, State Department of Health.

3.05 "The Development of a Public Health Laboratory." Dr. F. H. Slack, Instructor, Department of Biology and Public Health, M. I. T., and formerly Bacteriologist to the Board of Health of Boston.

4.00 There will be an opportunity for persons engaged in laboratory work to visit either the State or the City Diagnostic Laboratory.

WEDNESDAY, MAY 29.

MORNING.

Session on Public Health Reports.

At the Massachusetts Institute of Technology, Cambridge, Room 10-250.

9.05 "Statistical Arithmetic." Prof. G. C. Whipple, Professor of Sanitary Engineering at Harvard University and the M. I. T.

10.05 "Graphic Methods in Public Health Work." Dr. J. P. Bill, Department of Preventive Medicine and Hygiene, Harvard Medical School. *Stereopticon.*

11.05 "How to Keep Posted on Public Health Progress." John Ritchie, Jr., formerly Health Commissioner, City of Boston.

12.05 "The Annual Report." A. W. Hedrich, Secretary, American Public Health Association.

AFTERNOON.

Session on Specific Diseases.

At Massachusetts Institute of Technology, Cambridge, Room 10-250.

2.05 "The Control of Venereal Diseases." Dr. John S. Hitchcock, Director, Division of Communicable Diseases, State Department of Health.

3.05 "The Relation of Feeble-mindedness to Public Health." Dr. Walter E. Fernald, Superintendent, Massachusetts School for Feebleminded.

4.05 "Present Needs in the Tuberculosis Campaign." Dr. John B. Hawes, 2d, Secretary, Trustees of State Hospitals for Consumptives. *Stereopticon.*

THURSDAY, MAY 30.

AFTERNOON.

Session on Industrial Hygiene and Sanitation.

At Massachusetts Institute of Technology, Cambridge, Room 10-250

2.05 "Diet and the Health of the Worker." Dr. Percy G. Stiles, Assistant Professor of Physiology, Harvard University.

3.05 "The United States Public Health Service and the Sanitation of War Industries." Passed Assistant Surgeon A. J. Lanza, United States Public Health Service, Washington, D. C.

4.05 "Industrial Health." Dr. David L. Edsall, Jackson Professor of Clinical Medicine, Harvard Medical School, and Member of Public Health Council, State Department of Health.

EVENING.

At Massachusetts Institute of Technology, Cambridge, Room 10-250.

7.30 "Methods Employed in Public Health Education in China." Dr. W. W. Peter, Secretary, Joint Council on Public Health Education, Shanghai, China. A lecture, richly illustrated, to be followed by a social hour. Ladies especially invited.

FRIDAY, MAY 31.

MORNING.

Session on Child Welfare.

At Huntington Hall, 491 Boylston Street, Boston.

9.05 "Dental Hygiene, the Prevention of Children's Diseases Through Supervised Care of the Mouth." Dr. George H. Wright, Lecturer on Dental Hygiene, Harvard Dental School.

10.05 "Ten-Years' School Nursing in the Boston Public Schools." Miss Helen F. McCaffrey, Supervising Nurse, Boston School Department.

11.05 "The Plan and Work of the Committee on Child Conservation of the State Department of Health." Dr. Richard M. Smith, Secretary of the Committee.

12.05 "Child Welfare in War Time." Dr. Dorothy Reed Mendenhall of the Division of Hygiene, Children's Bureau, U. S. Department of Labor, Washington, D. C., and Lecturer on Health, Agricultural Extension, University of Wisconsin.

AFTERNOON.

Session on Public Health Administration.

At Huntington Hall, 491 Boylston Street, Boston.

2.05 "The Work of the Public Health Nurse." Miss Anne H. Strong, R.N., Assistant Professor of Public Health Nursing, Simmons College. *Stereopticon.*

3.05 "Public Health Administration in Rural Districts." Dr. L. D. Bristol, M.D., Dr. P.H., State Commissioner of Health of Maine, formerly Special Agent, Massachusetts State Department of Health Investigating Infant Paralysis.

4.05 "Essential Activities of a Board of Health." Dr. Lyman A. Jones, Director of the Division of Hygiene, State Department of Health.

Time of Lectures.

All lectures will begin *promptly* at five minutes after the hour, and those attending are asked to be in their seats before this time, in order to avoid disturbing the speaker and the audience. In general, lectures will close at forty-five minutes after the hour and ten minutes given to a round table discussion in charge of the speaker. Listeners are urged to bring up practical questions for discussion at that time. In all cases, ten minutes' intermission will be allowed between lectures.

Welcome.

Not only Public Health Officials of the State of Massachusetts, but all persons professionally interested in public health and allied activities will be welcome at these sessions.

Place of Meetings.

The sessions of Tuesday, May 28, and Friday, May 31, will be held in Huntington Hall, Rogers Building, at 491 Boylston Street, Boston.

The sessions of Wednesday, May 29, and Thursday, May 30, will be held in Room 10-250 at the new Technology buildings in Cambridge. This room is on the second floor in the central building, directly under the dome. To reach the new Technology buildings from Park Street or South Station, take the Cambridge Subway to Central Square, transferring there to a Dudley Street car. Leave this car at Bexley Hall and enter the Technology building from the side.

Information.

Further information may be secured by writing or telephoning to the agent of The Public Health Committee, C. E. Turner, M.A., 69 Massachusetts Avenue, Cambridge. Telephone Cambridge 6900.

The Boston Medical and Surgical Journal

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Addresses.

ROENTGENOLOGY IN THE AMERICAN ARMY.

By Frank Wheatley, Jr., M.D., North Abington, Mass.,

First Lieutenant, Medical Reserve Corps.

Although I am not able to be in Brockton to fulfill the duties of the office that is usually delegated to the newer members of a medical society,—that of orator,—I feel that, possibly, you will not consider it entirely inappropriate that my efforts in this matter take the form of a letter describing the activities of my branch of the service. Such a letter will have the undeniable advantage of being short, as one's duties in the x-ray department, in addition to military activities, are such that there is little time for personal use. From 5.45 A.M. to 9.30 P.M. there are things that must be done, and between these two hours one has a pardonable desire to rest. Sunday he has an intense longing to get back to nature, especially during the wonderful spring weather which we now have at Chickamauga Park. However, that you may suffer properly for the sin you have committed in creating such an office, the orator of 1918 is sacrificing his spare time to that end. If, on his return, he finds that the Plymouth District Society no longer has orations at its annual meeting, he will consider that his sacrifice was productive of a great good—not always, perhaps, to the Society as a whole, but certainly to the newer men who are in danger of being called upon to deliver one of these "gas attacks."

When it became certain that this country would enter the world-war, it was found that little preparation had been made for the use of x-ray in the army. It was also realized that, with the newer type of warfare, using shells with undreamed-of explosive power and bombs which produce extensive lacerations filled with dirt and shell fragments, we would need, more than ever before, the assistance of the Roentgen ray.

To meet the emergency caused by these new conditions, the Council of National Defense, working in conjunction with the American Roentgen Ray Society, called a meeting at New York to elaborate a program which would make the American army efficient in this respect.

As the situation was studied, it became more and more apparent that the need of such a program was great, and the committee became enthusiastic about the prospects of developing an organization which would render the greatest assistance to the surgeons in the war zone. Then the plans of the War Department for reconstruction hospitals were made public, and more than ever before, the committee realized the responsibility placed upon it.

As the scope of the work developed, it became apparent that the x-ray apparatus available did not possess some very essential features which would make it adaptable for war use. It was too cumbersome, and there was little effort made toward standardization. Also there was need of a powerful portable outfit which would furnish its own power.

To overcome these difficulties a sub-committee was put to work, and these men, in association with the large apparatus manufacturers, evolved some absolutely new and very desirable machines —among them being the U. S. Army Bedside Unit, which uses a new type of Coolidge tube and develops a large amount of radiation from any electric light socket, and the U. S. Army Portable Field Unit which utilizes a simple gasoline engine for power. The latter outfit is the one most used in the zone of advance, and it gives opportunity to fluoroscope the entire body of the wounded shortly after the injury is received. An accessory being developed for the Bedside Unit is a stereoscopic fluoroscope which will allow the operator to obtain perspective. This feature will be of great aid while operating for foreign bodies, as the old-style fluoroscope gave simply a shadow picture.

It soon became plain that there were not enough x-ray men in the country to furnish the personnel required, even if every one were called, and the plan of instructing officers of the Medical Reserve Corps in this work was instituted. In a dozen large centers throughout the country, leading roentgenologists were detailed to start military x-ray schools—these schools being under the direct supervision of the Surgeon-General of the Army. Dr. (now Major) A. W. George, my own instructor, had charge of the Boston school which drew its men from the New England States. These schools were intended only to furnish men needed at once, and it was the intention to close them all after arrangements could be completed for their consolidation at Oglethorpe. This work is now finished, and all the schools will be closed shortly except the one here with which I am connected.

It may be interesting to you to know that the plans of the Surgeon-General contemplate the founding of the greatest medical training school in the world, here at Oglethorpe—a permanent organization having for its instructors men of international standing, and for its students men especially selected for service with the army. The location is historic. In the Civil War the battles of Chickamauga, Lookout Mountain, Missionary Ridge, and Chattanooga form an interesting chapter. In the Spanish War, Chickamauga Park became notorious, as more men died here from disease than were killed by the enemy. Typhoid and dysentery had full sway—to the disgrace of the Medical Corps of the Army. The doctors, however, were not entirely to blame as they had no power to enforce measures for sanitation, and other officers, laymen, had no sympathy for such "foolishness," as it probably seemed to them. So it is an interesting fact that, twenty years after the display of such inefficiency, the Medical Department of the Army selected this spot as the center of their activities, and can point to records of the entire army, week after week, with absolutely no typhoid or dysentery—typhoid reduced by vaccination; dysentery by sanitation. The Owen Bill, now before Congress, increasing the rank of the Medical Department in order that they may have power to enforce sanitation, should have the active support of every medical society.

In order that the full scope of x-ray work in the army may be understood, it is necessary that one understand the various medical components of a fighting force. First, there are regimental aid stations located as near as possible to the front, where the wounded are given temporary aid, such as simple dressings, morphine or hot drinks. Then, further back, there are dressing stations, where new dressings are applied, so that the patient can, if necessary, be transported to the next unit, the field hospital, which may be approximately five miles from the front. It is here that the first x-ray work is done. Further back, possibly fifteen or eighteen miles, are situated the evacuation hospitals. These are mobile units, but have much more extensive equipment than the field hospital. Then come the base hospitals which are situated in permanent positions—many in this country. The litter-bearers, ambulance companies, hospital trains and ships, furnish transportation between these various units.

In the field hospital, the portable gas engine apparatus is used for the fluoroscopy of the entire body of the wounded, in search of foreign bodies. Little plate work is done, but the accurate localization of shell fragments, bullets, etc., is accomplished by extremely ingenious methods perfected since the war began. During the period of hostilities this fluoroscopic work will comprise the major part of the duties of the x-ray personnel.

In the evacuation hospital, the smaller transformer outfit is used for what plate work is done—mostly pictures of fractures. And, of course, the bedside portable, with its stereoscopic fluoroscope, is made use of in the wards.

In the base hospital the most elaborate x-ray equipment is found. Here, all the apparatus common to a well-equipped x-ray laboratory is used. Plates are used almost entirely, and it is here that the x-ray will be of the utmost importance in the rehabilitation work the Government has planned to undertake after the war.

With the new types of apparatus made available by the foresight of the Council of National Defense, the Medical Department of the American Army is in a position to treat the wounded much more efficiently than has hitherto been possible. With the high-powered portable apparatus the committee has evolved, foreign bodies can be removed soon after the injury is received, thus shortening the time so important in the eternal fight against sepsis.

One of the epoch-making plans our Government has is the treatment of the wounded after the war is over. It has been the practice to turn loose on the community a large number of semi-crippled men with a small pension, and the result has not been altogether beneficial either to the individual or to the community. It is the purpose of our Government to discharge from the army no wounded man until his injury is cured completely, or, if that is not possible, until he has been trained in some line of work that he can do efficiently in spite of his injury. This means the establishment of a large number of so-called reconstruction hospitals. These will be base hospitals and here the surgeon and roentgenologist will work together to correct deformity and to return to civil life men able to take care of themselves. One of the largest of these hospitals will be located here in Chickamauga Park and will furnish clinical material for the instruction of men in training.

One of the most interesting phases of x-ray work in the recruit camps is the detection of malingerers. As long as there are humans there will be slackers, and we feel humiliated when one of them gets away with his tale of woe. One of the drafted men was given a discharge because of kidney stone. Before he left he did too much talking, with the result that an epidemic of kidney stone symptoms broke out in his company. Of course, justice to the men demanded complete investigation of these symptoms, and when a few had been x-rayed and found wanting, the epidemic disappeared as mysteriously as it came. On the other hand, there are many cases in which an unsuspected lesion, which would incapacitate a man for military service, is discovered, and the Government is saved the unnecessary expense of training a useless soldier. X-ray furnishes one of the safest and surest methods for the detection of malingerers.

Roentgenology, as a science, has reaped unusual advantages from the stimulus furnished by the necessities of this great war. Not only has the apparatus been standardized and made infinitely more efficient, but the clinical material available has added to our knowledge of pathological lesions.

More and more is the surgeon turning to the roentgenologist, not only for aid in diagnosis, but also for information concerning the progress of pathology under treatment. These two professions are working in harmony, and progress made by either one is dependent, to a degree, on the progress made by the other. It is from the surgeon's work that the x-ray man has learned to interpret his own work. It is by understanding the possibilities and limitation of each that this harmony, and also efficiency, has been brought about.

The diagnosis of tuberculosis by x-ray plates has been worked out to a remarkable degree from clinical material made available by the army, and, after the war, this knowledge will aid in the campaign against the "great white plague." Obscure bone and joint lesions will be much easier to diagnose, for the war has given us a vast amount of clinical material of this nature, and, instead of telling the surgeon that pathology is present, the roentgenologist can give a far more detailed statement of the true condition. The stereoscopic fluoroscope will enable us to visualize the angles and shapes of the intestines, and we shall be in a position to make lesions much more plain to the surgeon before he operates, or decides not to interfere. Also the heart and lungs will be clearly shown in their true relation by this device which is one of the direct results of the stimulation of the war.

So, as in almost every calamity, the evils which are only too apparent at the time are, to a remarkable extent, offset by benefits which become apparent later. Medical science, as a whole, will receive a lasting impetus from the situation brought about by the war, and roentgenology, especially, will have made great advances.

* * *

THE PHYSICIAN AND PSYCHOLOGY.*

By J. Danforth Taylor, M.D., East Boston, Mass.,
Secretary, East Boston Medical Society.

At the completion of his course in the medical school and, possibly, after a year or so of training in the hospital as an interne, our embryo physician is let loose upon a credulous public as a full-fledged medico. With the greatest confidence in his own skill and ability, he hangs up his "shingle" and prepares for the rush of patients which he expects. No doubt he has seen and knows of older practitioners, with far less training and knowledge than he has, who make a big success of medicine, and he reasons as follows: "If those old graybeards can make good and know as little as they do, it will be more than easy for me." But year after year passes by and at last he is compelled to acknowledge that he has been a complete failure and often turns to some other business to support himself.

The "old graybeards" were possessed of something by which they were able to increase their business and to out-class all competitors.

Why is this often so? What are some of the necessary qualifications for success in the practice of medicine?

A competent knowledge of the various branches of medicine and surgery is, of course, the first requisite. Common sense in the application of that knowledge, a neat personal appearance, correct habits, a courteous manner, and the ability to "size up" the other fellow, are indispensable qualifications—the last of these being one of the most important.

A knowledge of the essential factors of psychology is as necessary to a man's success as knowledge of his business. All successful leaders in the social and business world are practising psychology whether they realize it or not. Whatever they do is imitated and reflected on those who imitate by the power of suggestion. Medical practitioners in every city and town are pointing to their successful men and asking, "How do they do it?"

It would, indeed, be ridiculous if one expected to tell the whole story of psychology in this brief paper. But the worth of any article or spoken word is not so much in its intrinsic value, as its power, through suggestion, to stimulate the brain cells to act and strive for a deeper knowledge of the subject.

Older books defined psychology as the science of the soul, of the mind, or of consciousness, but they all fall short because of the difficulty in correctly defining those terms. Best of all is the definition of McDougall, of Oxford, when he calls psychology "the study of behavior." There it is, in a nutshell,—"the study of behavior,"—and under that classification we can study and observe all kinds of behavior in man or beast, bird or insect, be it normal, supernormal or subnormal.

It is the duty of science to collect all facts, classify and compare them, experiment with them, and then draw conclusions which shall stand as hypotheses, until they have been so universally verified that they become laws.

All human society works on the growing mind by a number of processes which we can classify briefly under three great heads,—suggestion, sympathy, and imitation.

Suggestion is where one communicates or induces a belief in people, independently of all logical reasoning, to a conclusion. Politicians cater to popular beliefs and sound popular slogans irrespective of their truth. Hypnotic subjects perform ridiculous antics through suggestion.

Sympathy makes us experience the same emotions and impulses as our neighbors when confronted by the same conditions. Note the common expression of sorrow over the loss of a relative by death, or of the loss of money or of sickness. Note also the universal indignation aroused when warring nations kill and maim innocent women and children.

Imitation prompts us to direct our bodily and mental movements according to a pattern set us by others. Observe how we follow certain lines of clothing, talk, customs, etc., of those with whom we come in contact.

You may say, "yes, this is all fine, but where does a knowledge of all this help a physician?" Let us look at this illustration: A patient visits your office. You receive him in a dignified and courteous manner. You try to convey to him the idea that you are interested in his case and will do all you can to help him. You take his family history, drop a brief word of sympathy if he has had recent deaths or congratulate him on the virility of his people if they are all alive.

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* Extract from lecture delivered to the East Boston Psychological Society, April 24, 1918.

As all religious societies recognize the value of music to place the minds of the congregation in a receptive mood, so the physician must recognize the hypnotic value and effect of the human voice, properly modulated, in calming his patients' nerves and getting their confidence.

Having passed through the usual careful physical examination which should always be complete as possible, considering the nature of the case, the patient is then assured that "there is hope." (That one phrase made millions for Munyon.) If the case is one in which there is no hope, it is well to inform the relatives of the patient of the facts. Whether we are justified in telling a patient is one that depends on the circumstances.

The patient who visits a physician and is told that, with care, and the following out of directions, there is every prospect of his being helped and eventually cured, will leave that office feeling better in mind and body because the suggestions have had a favorable reflective action.

If the physician dispenses his own drugs, the patient *sees* the medicine, *hears* the assuring words of the physician, is impressed with the time at which it should be taken, and *feels* the package when placed in his hands.

The physician has given his message to a *receptive mind,* and his success is assured in 80% of his cases. Why? Because the most *primitive sensations* of his patient have been appealed to and stimulated in a most powerful manner. His *visual sensations* have recorded the courteous manner of his reception and he has seen his medicine prepared. His *auditory sensations* have been pleased with a well-modulated voice which has assured him relief from his physical conditions, and his *tactile sensations* have felt the package containing the remedy which is to help him.

His physician has *suggested* that he will be well; he feels that the doctor *is in sympathy with him,* and unconsciously he *tries to imitate* a man of stronger mentality and fall in line with his suggestions.

By association, any previous success that the physician may have had with the patient, or a remembrance of some friend who has been successfully treated, at once tends doubly to impress and fix on the mind of the patient the thought that he will be well. Associations of this kind may be stimulated by the physician *who uses tactful suggestions* which leave in the mind of the patient only favorable sensations.

A large proportion of patients have mental disturbances of brief duration, as well as physical ones. Ability to treat those mental or physical conditions is greatly enhanced by a knowledge of psychology. The use of psychology at the present time by the army and by large industrial concerns in picking men of efficiency should impress us all with its importance and value.

Let me repeat: as much knowledge of medicine and its allied branches as one can absorb is indispensable, but, without a working knowledge of the elements of psychology, one's years of preparation are liable to go to waste.

One thing more: the study of psychology is a review of the behavior of all peoples, at all times and under all conditions. It is a college education in itself. Why not look into it?

Original Articles.

RENAL AND URETERAL STONE.*

By Benjamin Tenney, M.D., F.A.C.S., Boston.

Some years ago a five-year period in the records of the Massachusetts General and of the Boston City Hospital showed that a trifle over three per cent. of the surgical admissions could be classed as urinary cases. Of these urinary cases a little over one-third, or one per cent. of the total surgical admissions, were treated for stone in the urinary tract, and the proportion may have increased with the greater perfection in urinary diagnosis which has been acquired since 1915. Certainly a lesion which may be expected at least once in every hundred surgical cases is worth keeping constantly in mind. Of 1140 cases, quickly assembled from the literature and not duplicated, 668 were in males and 472 were in females.

Many studies of the composition of urinary stones lead to the same conclusion, as stated by Morris, that they may be classed as primary and secondary. "Primary calculi are composed of certain salts or other ingredients precipitated from the urine in the *kidney* independently of any preceding change in that organ and of any septic condition in the urinary passages. Microörganisms thus take no part in this formation. Secondary calculi occur in kidneys (and bladders) which have been the seat of previous disease (or injury), whereby lime salts are precipitated from the urine as a result of chemical changes caused by the presence of microörganisms.''

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* Read before the East Boston Medical Society, October, 1917.

Most calculi are built up in concentric layers around a nucleus, and these layers may consist of the different urinary salts in almost any order. An examination of the collection of stones in the Hunterian Museum led the chemist to consider the calculus with a urate nucleus as formed in infancy, that with a uric acid nucleus as formed in young adult life, and that with an oxalate of lime nucleus as formed in middle life.

The origin of urinary stone is not yet fully determined. The older theory is that of ''diathesis,'' whatever that may be, whereby one person out of many, living the same life, eating and drinking alike, precipitated his urinary salts in the form of a palpable stone. Another theory requires a bacterial origin for all stones, in spite of the fact that most stones are unilateral, while bacterial excretion is bilateral. A more recent suggestion is that of partial obstruction of outflow, producing somewhere a slowing of the urinary current. The ''diathesis'' may finally be found to be some combination of the last two factors.

It is generally agreed that almost all urinary stones originate in the kidney, and they are found below the kidney, and often increase in size after migration. We find crystalline deposits in the kidney substance both at autopsy and on the operating-table. I distinctly remember one patient whose x-ray examination showed two shadows, one produced by a calculus free in the kidney pelvis, and the other by a little pocket of gritty crystals near the lower end of the kidney substance. An interesting article by Bolognesi, on ''Lime Infarcts in the Kidney,'' describes the appearance of these deposits after the administration of various chemicals by mouth and following the injection of certain liquid antiseptics directly into the kidney. In all the instances the deposit was in or near the tubules, and not in the glomeruli. How often these and other crystalline deposits occur in our kidneys we have no means of knowing, but the proportion of men and women who at intervals feel a sudden sharp stab of pain, sometimes referred to the rectum and sometimes to the bladder or genitals, is really quite large. The sensation described differs only in duration and degree from that produced by a visible concretion.

Probably most of us have crystalline infarcts in our kidneys at some time in our lives, and most of us work them out while they are still too small to produce more than trivial symptoms. The individual who retains them in the kidney substance and increases their size, ultimately discharges them into his kidney pelvis where they probably produce the first subjective disturbance. The crystalline deposits are found in the region of the uriniferous tubules rather more than in the glomeruli, and this may have some bearing on their migration into the pelvis. Further than this we have occasional pelvic diverticula whose shape is such that a visible fragment might easily be ratained and grow therein until some accident shifts it to the upper opening of the ureter.

Of 654 cases of renal and ureteral stones, reported by Braasch from the Mayo Clinic, 56% were removed from the kidney and the rest were passed, or removed from the ureter. At the present time we can say that a few more than half of these stones are recognized while yet in the kidney, and that this is probably due to some anatomical peculiarity which retains them there until they are too large to escape.

After they enter the ureter they may be stopped at either of the three narrowings, the first about two inches below the kidney, the second just above or below the pelvic brim, and the third and narrowest in the vesical end of the ureter. About two-thirds of the operated cases have had stones removed from the lower end of the ureter. The history of a stone in the bladder is not unlike that of a stone in the kidney pelvis; probably most which can get through the ureter pass out through the urethra, giving minor discomfort. Some pass with great pain, some are caught at one of the narrow spots, and others are retained within the bladder in a diverticulum, or because the shape of the internal meatus prevents the stone from engaging in it. That this theory rests on solid ground is shown by the fact that one patient out of every eight operated for prostatic obstruction, in a series of 816 cases, had vesical stone.

To sum up: we do not understand the mechanism by which a crystal too large for a urinary tubule reaches the kidney pelvis,—perhaps a constant urinary pressure behind it, slight but persistent. Its retention in the pelvis may well be the result of some peculiarity in the shape of a calyx of the kidney.

Once in the ureter, we have the peristaltic action of the ureter assisted by the pressure of the urine, if the stone has entirely blocked the passage, to carry it along. Once in the bladder its further progress is determined by the presence or absence of anatomical obstruction.

Urinary stones produce quite different symptoms when obstructing the urinary outflow from those described when the stone is quiet and the urine can flow past. Urinary obstruction is far more common than any one cause for it, and the subjective symptoms of such obstructions are practically the same whatever the cause. On the other hand a "sleeping" stone may produce so few and such indefinite symptoms that its discovery by x-ray or in the course of some abdominal operative work may be quite unexpected. For these reasons it is impossible to give any set of symptoms which will allow us to make a diagnosis from the case history and ordinary observation.

Usually during an attack of renal colic the quantity of urine is diminished, while the frequency of urination is increased, and this is a valuable indication in cases with acute and severe symptoms. Complete anuria is more commonly associated with urinary stone than with any other cause. The urine passed by a man or catheterized from a woman will often give valuable evidence for or against urinary stone if the sediment be promptly examined under the microscope. Obvious blood in the urine helps in the diagnosis, but the presence or absence of albumen counts for little.

The group of symptoms characteristic of urinary stone includes hematuria, subcostal or vesical pain, and unusual frequency in urinating during activity. This combination never exists without some serious lesion in the urinary tract, though the lesion is not always a stone. The converse is also true—that a stone may be lying in the kidney, the ureter, or the bladder without any symptom of this group showing for a long period, and our history-taking may fail to reveal the presence of any of these symptoms in the past. With some patients the diagnosis makes itself, and with others it is made only after disappointments at the failure of varied surgical adventures to give relief.

The x-ray has given the most reliable assistance in diagnosis of all the methods used, but the 10 or 15% of error in the hands of most competent operators forbids our complete trust in its showing. The cystoscope and ureteral catheter are helpful in making the diagnosis and sometimes give a positive answer, but more often they contribute only a piece of evidence to be weighed with the rest. Fortunately, with these aids and a careful history, a definite and accurate diagnosis can be made in the majority of cases.

If it is pain that brings the patient and physician together, the patient's hand will locate the pain more definitely than his words. If he locates it about the twelfth rib, think of obstruction to the urinary current on that side. This obstruction may be stone, or clot of blood or pus, or kink or stricture in the ureter. The pain may be anything from a dull aching in the upright position only, to a prostrating agony with vomiting, cold perspiration, and rigid abdominal muscles. It may simulate an appendix or gall-bladder colic, an acute intestinal obstruction or perforation, or the rupture of an extra-uterine pregnancy.

Ureteral colic reaches its maximum of pain rather suddenly, and is peristaltic in character, corresponding to the ureteral contractions which are more frequent than those of the intestine, but the ache of a distended kidney is more likely to be a steady grind, and to be relieved by horizontal posture.

If hematuria is the symptom which occasions the professional visit, we can confine our study to the urinary tract and inquire into the details of its appearance before, with, or after urination, its relation to activity and posture, and its association with pain and functional disturbance. In these cases the cystoscope is indispensable as well as the best means of destroying bleeding papillomata.

If the female patient comes for relief from frequent urination, urgent urination, leakage, or pelvic discomfort, the physician should always keep in mind the possibility that a ureter or vesical stone may be the cause, even if there be some genital injury or abnormality. Here again the cystoscope and x-ray, separately or combined for pyelography, will give invaluable assistance in determining the cause of the symptoms.

Fortunately, urinary stone is not rapidly fatal. Death from calculus anuria seldom occurs before the fifth day, and the other fatalities from urinary stone are much slower. Ureteral and renal colics quickly reach their maximum of pain and general disturbance while the other acute processes with which they may be confused do not reach their maximum of general disturbance so rapidly.

The mistakes of diagnosis in the atypical cases are due to various things. If a man takes his responsibility to a specialty more seriously than he does his general pathology he will include too many outside cases in his list honestly, because his questions are unconsciously framed to elicit certain answers. Another source of error is the persistence in our minds of names that mean nothing definite, such as lumbago, neuralgia, inflammation of this and that unseen organ, and the like. Another is the eagerness to give relief by mechanical means with which the practitioner is familiar, and which have brought him honor in cases which justified his quick diagnosis.

It is a melancholy fact that most of us will die before we attain to perfection in diagnosis or anything else, but careful history-taking and the equally careful use of the diagnostic methods available in a large town will be followed by fewer mistaken diagnoses in the urinary tract than in almost any other human department.

TREATMENT.

There is but one,—removal either by direct operation or through the natural passages. Attempts at solution or disintegration of a real calculus by drugs or waters are followed by the same degree of success that obtains without their use. Sixty-four out of 654 cases of renal and ureteral calculi reported by Braasch were eliminated without a cutting operation. Many patients are so little incommoded by their stones that they prefer to take the chance of elimination rather than have prompt surgical relief, and for them we can try distention of the bladder to the limit of tolerance, rectal irrigation with hot water, or the various fluids suggested for use through the ureteral catheter. Operating cystoscopes fitted with scissors for slitting the ureter orifice, and forceps for grasping the stone, have been used with success by some urologists.

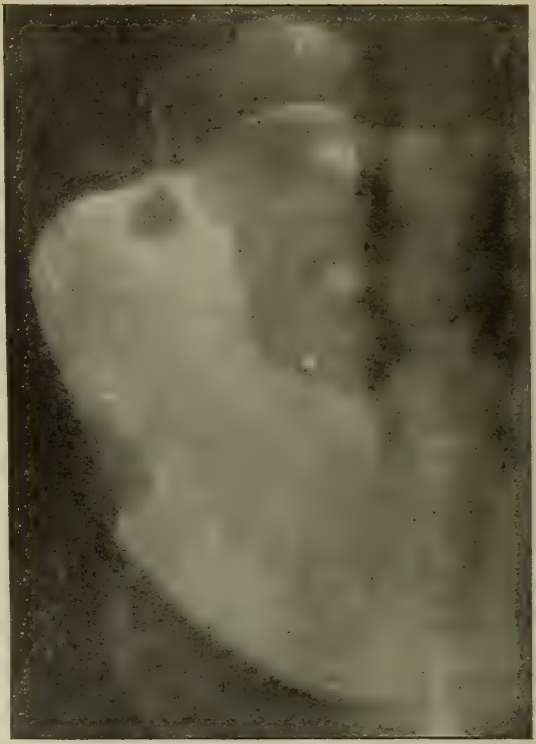

Fig. 1. Ureteral Stone. May, 1913. E. W. S.
(Kindness of Massachusetts Homœopathic Hospital, X-ray Dept.)

For the control of pain during a colic, opium in the form of Dover's powder or morphine hypodermically are best. Inhalation anesthesia is preferred by some because it can be discontinued at once when the pain stops. Prompt relief can be obtained by open operation on any part of the urinary tract, with very low mortality. Posterior pyelotomy is preferred for renal stone when the kidney can be well mobilized. Nephrotomy is often necessary because of adhesions or a short pedicle, and nephrectomy can be done if the kidney be damaged beyond comfortable repair and its partner be known to be competent. Suture is necessary after nephrotomy or pyelotomy.

Stones in the ureter are best removed by cutting directly down on them. Suture is desirable and usually successful, but a fistula from a ureter usually closes. Removal of these stones is in one way like the removal of gallstones,—the anatomical conditions which accompanied their formation still exist and may favor re-formation or themselves produce symptoms. For this reason the suggestion of Fowler that after extraction of a renal stone the kidney should be fixed parallel to the twelfth

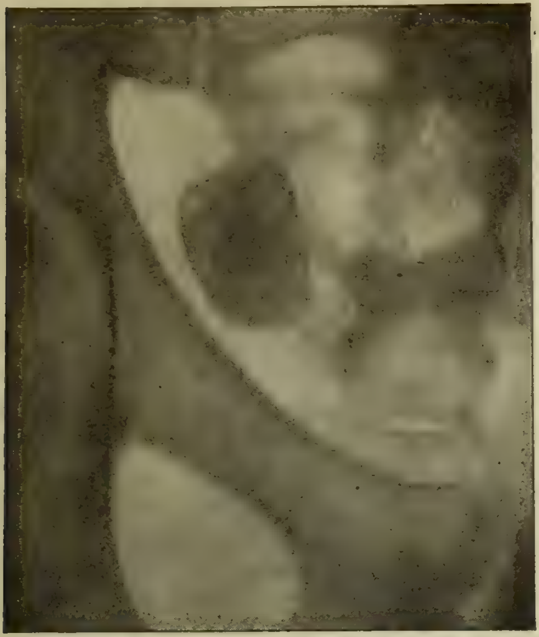

FIG. 2. URETERAL STONE. MARCH, 1916. E. W. S.
Taken by Dr. A. W. George.

rib is worth considering. Such a position might make the difference between the retention and growth of a crystal in a calyx and its prompt discharge through the ureter. After removal of ureteral stones occasional dilatation of the ureter is advisable and sometimes very necessary.

Without operative treatment the stone may be expelled, a 10% chance, according to the figures quoted, and certainly a painful experience. If the stone is allowed to stay in the kidney it will cause some degree of discomfort and disability and some damage to the kidney structure if too large to engage in the ureter. If the stone remains in the ureter, the discomfort and disability may be greater, with the probability of producing a hydronephrosis, and the possibility of a periureteral abscess from perforation of the ureter, or fatal anuria. Another possibility is shown in the x-ray plates accompanying this paper. The first plate was taken in 1913 and the second in 1916. The stone lay in a dilated ureter, adherent to the walls, and was easily crushed during extraction.

Some of my cases are briefly reported which show some special feature of interest.

CASE 1. Referred by Dr. John L. Ames.—Three years previous to my examination she had spent three days in bed with severe pain in the lower abdomen, vomiting, and frequent urination. At the time of her examination her urination was $\frac{4-6}{0}$. Catheter urine was perfectly clear and albumen-free. She had a large uterus with multiple fibroids. At the time of hysterectomy a calculus was felt and removed from the left ureter, but at no time could any further history, suggesting ureteral calculus, be obtained.

CASE 2. Referred by Dr. F. A. Bardwell.—Nine years before, his appendix was removed. Four years later he was operated for acute intestinal obstruction and had a fecal fistula lasting two years. One week before his visit he had severe pain in right back, lasting six hours. This has recurred and prevented sleep. He had never had pain of this sort before, and no nausea with the pain, no radiation of pain, and no pain on left side. His right kidney was tender and also the line of right ureter. Urine showed pus and blood. Cystoscopy found hypertrophy of the ureteral bands. Both catheters passed easily and delivered cloudy urine from the painless side. An x-ray plate later explained this by showing a "sleeping" stone in the left kidney and a calculus in the right ureter. Both were easily removed at the same operation.

CASE 3. Referred by Dr. George Bowles.—Frequent and imperative urination, with leakage for years. Pain and tenderness on right side, contracted bladder and difficult cystoscopy. X-ray showed shadow in the region of left kidney. This was operated first under the idea of "crossed pain," which was then being discussed. A calcified lymph node was removed from the region of a normal-appearing kidney, and later a tubercular right kidney was removed, relieving the patient of her symptoms.

CASE 4. Referred by Dr. A. D. MacLennan.—Frequent urination for five years; two attacks of colicky pain on the left side, with increased frequency of urination, and one on the right side. Hematuria once. No tenderness over either kidney; urine contained pus and blood; cystoscopy showed a normal bladder, with tender left ureter and blood in both catheter specimens. X-ray showed no shadow in either kidney. I did not see him again, but learned that his left kidney was removed at the Boston

City Hospital on account of calculus pyonephrosis about a year later.

Case 5. Referred by Dr. Harry W. Goodall.—Hematuria for three weeks, with slight pain in lower left side for a few days. Blood always mixed with urine. No pain at any part of urination. No night urines. No pain on either side. Cystoscopy negative and no gross blood in either catheter urine; some microscopic in both, more in right. Three months later had attack of severe pain on right side, with tenderness over kidney and along right ureter. X-ray showed stone in right side, probably in upper ureter. This was removed without difficulty.

Case 6. Referred by Dr. Walter H. Young.—Pain in left side in periods lasting from three to nine hours, vomiting, urination hourly by day, two or three times at night. Urine contained pus and blood. Cystoscopy negative, purulent urine from left ureter. X-ray positive. At operation a double ureter was found with the stone easily removed from the second.

Case 7. Previously published. Attacks of colic for two years, pain extending to bladder. Attacks came on gradually, with diminution of urine, followed by an hour of increasing discomfort up to the colic. Much urine after pain stopped. Patient was very thin, and a very tender mass, freely movable, could be felt above the pelvic brim. A stone was easily removed from the ureter.

Case 8. Referred by Dr. Samuel Breck.—Case of calculus in both ureters, with pain sometimes on the left side and sometimes on the right, with the usual frequency, and purulent urine. X-ray showed shadows on left; and operation found and removed stone from upper end of ureter. Probe and catheter failed to find other concretions on this side. Convalescence was disturbed by severe pain in the right side, and vaginal examination found a tender nodule at lower end of right ureter. Oil was injected into the right ureter without immediate relief. Patient was transferred to a contagious hospital with scarlet fever and passed her right concretion there.

In two other cases, one seen with Dr. Henry F. Dearborn of Lawrence, and the other the wife of a physician, it has been possible to reach a tender nodule by vagina and identify it with the ureter. The nodule in these cases has been several times the size of its enclosed calculus and mostly composed of fat firmly adherent to the outside of the ureter. That the presence of such a tender nodule does not settle the diagnosis is shown by a patient referred by Dr. Daniel F. Murphy of Beverly.

She had a tender left nodule in close relation to the left ureter, urinary symptoms, left-sided pain, a positive shadow on successive x-ray plates, and a previous laparotomy. The only negative finding was the absence of obstruction in passing a ureteral catheter. At operation the ureter appeared normal, but was opened and explored its full length with a flexible metal probe without finding stone or other obstruction. In front of the ureter was an enlarged lymph node which probably had enough lime in it to produce the x-ray shadow.

Another case with positive x-ray and negative findings was referred by Dr. C. O. Kepler. In this patient, a young woman, there was no palpable nodule and nothing was discovered at the operation to account for the shadow.

To sum up: urinary stone produces about 1% of surgical cases and should, therefore, always be considered among the causes of loin and pelvic pain. A small stone may be passed through the natural tubes—about a 10% chance—and its passage may be assisted in various mechanical ways, but we have no reliable evidence of the solution of any such concretion. Nature's method may cause great and repeated physical distress, with danger to the kidney, and should not be endured beyond a reasonable time.

The surgical removal of stones from the kidney or ureter is safely possible in most cases, and desirable for all who have demonstrated their inability to pass them after such assistance as can be given through the cystoscope.

MOBILIZATION OF THE KNEE JOINT IN SUSPENSION-TRACTION TREATMENT OF FRACTURE OF THE FEMORAL SHAFT.

By G. A. Moore, M.D., Brockton, Mass.

Soon after the outbreak of the present war it became evident to most military surgeons that the generally accepted methods of treating fractures of the shaft of the femur in civil practice were inapplicable to war wounds of this region. By the accepted methods are meant, briefly, Buck's extension, Thomas' hip splint with lateral splints, plaster cast, Lane's plates and Parham's bands.

To those who have done military surgery in the present war, the reasons for discarding these methods are obvious: First, a simple fracture in a wounded soldier is as rare as a case of typhoid; and second, practically all fractures are infected with the most virulent types of bacteria.

In most hospitals today these wounds are treated by some form of wet dressing or irrigation, which increases the profuse discharge resulting from sepsis. Under such conditions it is necessary to change the dressings frequently; at least once a day, sometimes oftener.

The large dressings for absorption of discharge from the wounds interfered with the application of the splints in Buck's extension, and the lateral splints with the Thomas hip splint, and made them uncomfortable. It was found to be impossible to maintain traction and alignment of fragments with these methods during the dressing of the wounds, the use of the bed pan, bathing, etc.

The plaster cast does not offer these difficulties when once properly applied. It is, however, limited to selected cases, where the injury is not extensive. Its application in these cases requires considerable skill, as the wounded area must be bridged to allow dressings, and a certain amount of extension must be maintained by the cast. It is used more by men with orthopedic training than by general surgeons.

Plates and Parham bands have been used to some extent, but have given discouraging results and are being discarded. The screwholes for the application of plates offer new avenues for bacteria to enter the medullary cavity of the bones and increase bone involvement. Bands often become loose, owing to necrosis of ends of bones, and are of no value.

To obviate these difficulties, the method of treating fractures of the extremities by traction and suspension was adopted. This consists, briefly, in attaching a Balkan frame to the bed, with stringers between the head and foot pieces over the injured limb. The Balkan frame has been described so frequently in articles on war surgery that a repetition of it here seems unnecessary.

Traction on the limb is maintained by means of Canton flannel strips attached to the limb with mucilage.* These are attached to a spreader to which a cord with weights is attached, passing over a pulley at the foot of the bed. In certain types of fractures involving the lower third of the femur a Steinman pin or Finochetto band is used.

A Thomas-Hodgen splint, which is used in most hospitals, is then placed over the leg and the leg slung up in the splint by means of hammocks made from strips of cloth pinned to each side of the splint. The limb within the splint is then suspended by means of cords attached to the upper end, the middle and the foot of the splint. These cords are carried upward and passed through pulleys in the stringer of the Balkan frame. To the ends of these cords, after passing through the pulleys, are attached sand bags made of suitable size to balance the weight of the limb.

As a result of this maintenance of balance between the weight of the leg and the sand bags, the patient is enabled to raise or lower the leg at will and to move about on the bed as far as a hospital bed permits, without causing any motion of the fragments. It is surprising in dressing the extensive wounds that accompany these fractures of the femur, in bathing the patients, and in the use of the bed pan, to observe that practically all motion of the fragments is absent.

In applying the various splints in base hospital work to fractures of the extremities, one is first impressed with the ingenuity of these devices for allowing passive and active motions of the joints of the injured limb during treatment. These methods will be described in a later paper. While these methods are not in accordance with the old teaching of immobilizing the joint above and below a fracture, results have proven that in war surgery they are superior to the old custom. Better function of the injured limb is obtained at the time the fracture is united, and less time and expense are required for massage, electrical treatment, baking and passive and active exercise, to obtain complete function after the splints are removed.

In the treatment of fractures of the shaft of the femur by this method, considerable motion of the hip joint is obtained by raising and

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* Prescription for mucilage:
Canada Balsam 1 ounce
Venice Turpentine ½ ounce
Ether ½ ounce

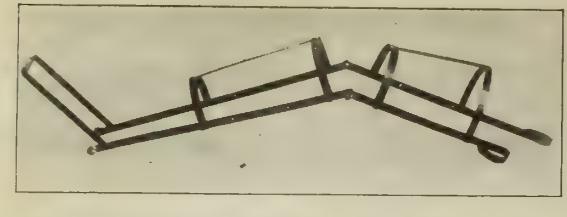

Fig. 1.—Modified Thomas-Hodgen splint for knee flexion.

lowering the limb; also by the patient's moving about in bed. So that ankylosis of the hip is rarely seen following this injury.

As regards the knee joint: so far as I have been able to learn, up to January, 1917, no method had been devised in the treatment of fractures of the femoral shaft for mobilizing the knee joint. The nearest approach to it were the so-called railway splint, and the bent Thomas-Hodgen splint; but both of these methods simply held the knee fixed in slight flexion and did not allow motion of the joint during treatment. As a result of the prolonged fixation of the joint, necessitated by the sepsis which accompanied many of these fractures, ankylosis frequently resulted, often requiring nearly as long to overcome and restore function in the joint as the treatment of the sepsis had required.

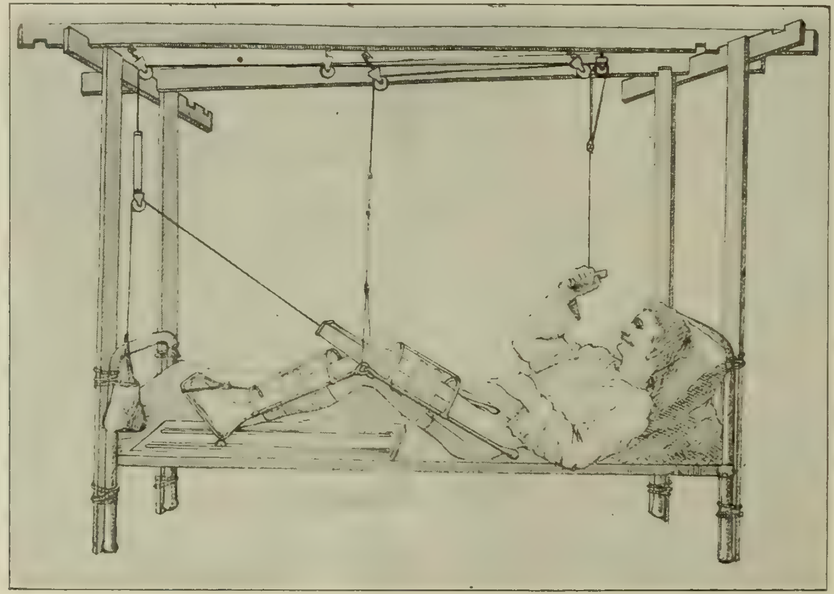

Fig. 2.—Drawings for splint, showing overhead plan of pulleys.

In treating this type of case in the American Ambulance Hospital, the idea presented itself to the writer that a Thomas-Hodgen splint could be jointed at the knee, traction maintained by extension straps attached above the knee, and the limb could be suspended in the splint in the usual way. Further, that a modification in the method of traction could be made, enabling the patient to raise the traction pulley coincidently with flexing his knee, thus maintaining traction in the line of the shaft of the femur at all times.

A modified Thomas-Hodgen splint was then made (see Fig. 1), hinged at the knee, and with eyes for suspension at the site of the joint; it was also jointed at the heel, and the foot piece held at right angles by rubber bands attached to the side pieces to allow motion of the foot and to prevent toe-drop. Then, as the heel of the splint would move upward towards the head of the bed when flexion of splint was produced, small wheels were attached to the heel part of the splint and a board placed in the bed for the heel to roll back and forth on.

The next step was the application of this device in such a way that traction would be maintained in the plane of the shaft of the femur in whatever degree of flexion the knee was placed. This was done in the following

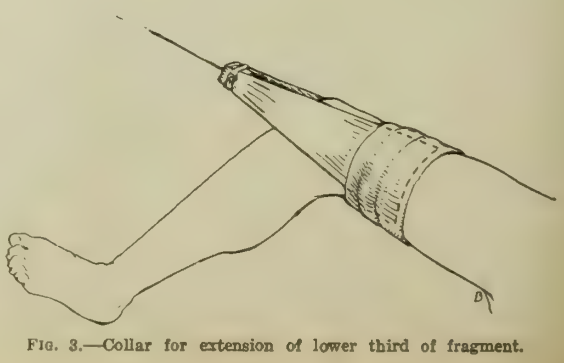

Fig. 3.—Collar for extension of lower third of fragment.

way: after suspending the limb in the splint in the usual way, the traction cord was passed through another pulley, suspended from the overhead stringer of the Balkan frame (see Fig. 2). The cord which supported the movable pulley was passed through another pulley on the overhead stringer. It was then carried towards the head of the bed and attached to the cord which suspended the limb at the knee after this cord has passed through a pulley. After joining these two cords together, the single cord was brought down over the patient's chest and attached to a hand piece within easy reach of the patient.

It will readily be appreciated that when the patient pulled on the hand piece over his chest, he would raise or flex his knee and at the same time raise the movable pulley which supported the traction weight. If these cords were adjusted properly, traction could be made continuously in the plane of the shaft of the femur. It was necessary to place check knots in the cords to prevent complete extension when the patient was not flexing his knee. Owing to the overhead loops on the splint, traction could not be maintained when the leg was in full extension. To allow the patient fully to extend his leg, a suspension cord was attached to the foot piece of the splint, carried up to the pulleys in the stringer, then forward and, after passing through a second pulley over the man's chest, it was brought down and attached to a second handle. By pulling on this handle the leg could be placed in full extension. The last step in the application of the splint was to suspend the upper end in the usual way, by means of a cord attached to the splint, passing through a pulley in the stringer, and then attached to a sand bag to balance the weight of the leg.

The application of long strips of Canton flannel to the sides of the thigh limited the use of the splint to fractures of the middle and upper third of the shaft of the femur. To extend the field of usefulness of the splint to the lower third of the femur, wide strips of Canton flannel, about 5 or 6 inches long, were applied to the lower end of the femoral shaft and attached to the skin with mucilage; these were further secured by turns of bandage soaked with mucilage as they were applied. This formed a collar about the lower portion of the femur, permitting extension of fractures in the lower third of the femur and at the same time allowing flexion of the knee (see Fig. 3). This idea was suggested by Dr. MacAuley of the American Ambulance and resulted in less edema of the leg than the Hennequin method.

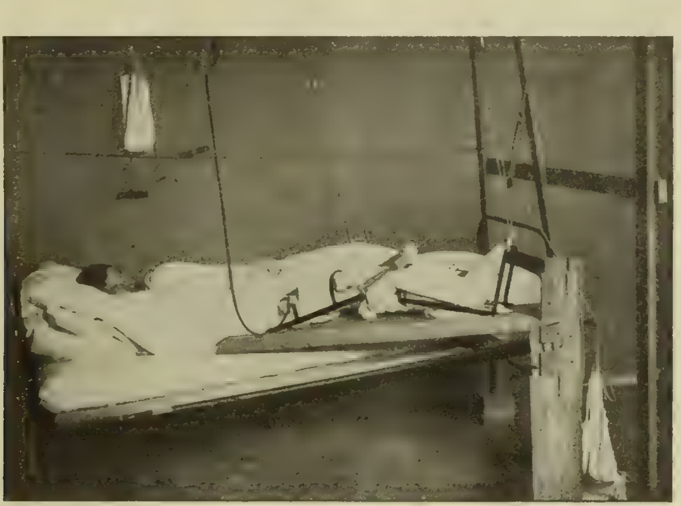

FIG. 4.—Splint applied in case of fracture in region of trochanters. Abduction frame in use with splint. Unfortunately, the entire Balkan frame is not shown in the photograph.

RESULTS.

On leaving the American Ambulance Hospital the last of January, 1917, we had not used this method on enough cases to give statistics on its comparative value. The patients on whom we had applied it showed: First, a rapid improvement in the movement of the knee joint; second, a gradual improvement in the atrophied condition of the thigh muscles; third, traction and alignment of fragments were maintained as well as by the old method of traction, by means of long strips on the leg below the knee; fourth, as a result of the flexed position of the leg, less weight was required to pull the fragments down and prevent over-riding. No pull was made on contracted hamstring muscles.

In the case illustrated in Fig. 4: A man wounded two months before entrance to the American Ambulance Hospital and treated in a hospital near the front. On entrance he presented a large gangrenous wound in the right trochanteric and gluteal region, with a sinus extending up into the right hip joint. X-rays showed a loss of substance of part of the upper third of the femur, the trochanters and part of the neck of the femur. He had almost complete ankylosis of the knee. On applying the splint he would rouse the entire ward by his cries each time he attempted to flex his knee. Four days later he was able to flex his knee to nearly right angles without pain and without any apparent harm to the wound. This case was not a real test of the method, as there was a loss of substance of the bone and therefore no fragments to keep in alignment or prevent from over-riding. But in the cases of fracture of the shaft of the femur to which it was applied, alignment could be maintained and over-riding prevented as well as by the older methods.

CRITICISM.

Much more care and patience are required in the application of this splint than the Thomas-Hodgen splint; and, similar to the latter splint, there are certain fractures of the lower third of the femur in which there is marked backward displacement of the upper end of the lower fragments where it is inapplicable. In such fractures the methods described by Blake and Bulkley are best suited. Like all methods of traction which depend upon the pull upon the bone being transmitted through the fascia, this method requires more weight than is used with a Steinman pin (Blake and Bulkley).

If a method of direct traction upon the bone could be devised, by means of which no injury to the periosteum or bone would be done, all methods of external traction could be discarded.

CONCLUSIONS.

This method was devised for the treatment of compound fractures of the shaft of the femur to obviate ankylosis of the knee joint. In the cases to which it was applied in base hospital work, it fulfilled this requirement. It does, however, require more care in application than the Thomas-Hodgen splint. On the other hand, when union is obtained and the wound healed, the patient is able to flex his knee, and there is less atrophy of the thigh muscles than following the older methods of treatment. From an economic point of view, as a result of this method, much of the massage, baking and electrical treatment necessary to obtain good function of the knee, following the older methods of treatment, is obviated. It is applicable to simple fractures as well as compound; and, like many other ideas that have been stimulated by the present war, has a field of usefulness in civil surgery.

Medical Progress.

REPORT ON DERMATOLOGY.

By John T. Bowen, M.D., Boston.

TREATMENT OF CUTANEOUS CANCER.

MacKee[1] insists on the importance of an early diagnosis of cutaneous cancer, and urges the need of impressing this fact strongly both on the student and practitioner. Also the lay public should be told that cutaneous cancer may be permanently cured if properly attacked sufficiently early, and that a physician should be consulted for a persistent lesion of the skin or mucous membrane. This is as important relatively as the early recognition of syphilis.

While the two main varieties of epithelioma—the basal cell and the prickly cell—may appear on the unaffected skin, they are usually preceded by keratoses, of either the seborrhoeic or senile type. It is not always possible to determine the type of epithelioma that may follow from these varieties of keratoses, therefore they are all to be considered as potentially dangerous, and should be destroyed. If a simple superficial keratosis, curetting, followed by cauterization of the base, is sufficient. The roentgen ray or radium is, of course, effective in such cases, but not necessary. Also solid carbon dioxide and fulguration may be employed. It should be remembered that the roentgen ray is capable in itself of causing keratoses, which are very liable to become malignant. In these cases more drastic measures should be resorted to than in simple and senile keratoses. Inasmuch as in all types of precancerous keratoses there are, in addition, changes in the lower epidermal layers, it is well to destroy the epidermis to a greater depth and extent. Leukoplakia, as it frequently eventuates in cancer, should be radically treated. Small patches should be destroyed with caustic potash, chloride of zinc, or the actual cautery. Radium is often effective. The pigmented mole is a dangerous lesion, especially the flat, deeply colored variety. It should either be left alone or thoroughly destroyed, as inadequate treatment often hastens epitheliomatous change. The method should be either a wide excision, or by the actual cautery.

With regard to recognized methods of treating cutaneous cancer, MacKee considers three principal ones that have received wide recognition: (1) excision, (2) cauterization, and (3) roentgen ray or radium.

Excision is indicated in small lesions in locations such as the cheek, lip, trunk and penis, where the resulting scar is unimportant or barely noticeable. In other locations, such as the nose, eyelids, etc., the resulting deformity is apt to be objectionable. Cauterization is accomplished by chemical agents, actual heat, or electricity. The high-frequency spark is usually employed only as an aid to some other treatment, as the roentgen ray. The method is painful and this is not wholly obviated by local anesthetics. Cauterization is by some considered to be better than the knife or curette, because it does not open up the lymphatic and blood vessels, and they also claim for it a selective action on the pathological tissue, and that an inhibitory action is produced on the malignant cell by the copious outpouring of serum.

Cauterization by Sherwell's method of thorough curetting, followed by the prolonged application of acid nitrate of mercury, gives excellent results. It is especially useful in cases where excision is inapplicable on account of the size, depth, or location of the lesions, or where they have failed to respond to roentgen ray or radium. In extensive lesions a general anesthetic is advisable. Arsenious paste, as recommended by Robinson, is reliable if properly employed, but it seems to be a method that requires considerable experience. Chloride of zinc is more destructive and the resulting scar more disfiguring.

Roentgen Ray and Radium. Broadly speaking, the action of these two agents on cutaneous cancer is about the same, and they are suitable for use in selected cases, the cosmetic results being superior to those by any other method. An objection is the atrophy and telangiectasis that sometimes follow these procedures. The absence of pain and the saving of time and inconvenience to the patients are advantages, on the other hand. It is in lesions situated in special locations, such as the inner canthus, the eyelids, and the alae of the nose,—places in which scarring is especially undesirable,—that these methods are indicated. It must not be forgotten that a serious dermatitis, that may never heal, sometimes follows the injudicious use of these agents. The best results seem to be attained by the so-called intensive treatment, although a few authorities have had good results with the fractional method. MacKee prefers the administration of full skin toleration doses at one sitting, at intervals of four weeks.

The basal cell and the prickly cell types of cancer are then discussed in relation to the three methods of treatment just described. In the basal cell type there is no fear of metastasis and the lesions are of slow growth, hence there is no need of great haste. Any one of the three methods may be properly employed, and statistics do not favor any particular method; excision, cauterization, and roentgen ray and radium treatment all giving about the same percentages of cure. It is, therefore, a question which is the best method in the individual case. MacKee thinks that roentgen ray or radium is the best method in every untreated case of basal cell epithelioma, unless the lesion is very extensive and deep seated. In these latter cases it is well to combine cauterization or fulguration with intensive roentgenization or radium therapy. If this procedure fails, or cannot be properly applied, excision or radical cauterization must be resorted to.

Squamous cell epithelioma is a type of much greater menace, as it is capable of rapid growth, and may give rise to metastases in its early stages. Hence early destruction, without regard to cosmetic result, is imperative. Usually an experienced clinician is able to differentiate between the basal and squamous cell type, but not always. Of late it has been questioned whether it is wise to cut out a bit of tissue for microscopical examination on account of the danger of diffusion by opening the lymphatic channels, as well as the use of the curette and radium insertions. The consensus of opinion favors the removal by excision of every lesion of this type that it is possible to eradicate wholly. Many favor removal of the neighboring glands as well, as it is impossible to be certain whether metastasis has occurred. Radium and the roentgen ray may cure permanently very young malignant tumors, but they are very unreliable if the growth is indurated, deep, or well advanced, and should be limited to the inoperative cases. They may, however, be used properly in connection with excision. MacKee gives the following rules for treating malignant cutaneous epithelioma.

1. If the lesion is in the earliest stages of evolution, a local cure may be expected as a result of adequate treatment with arsenic paste, actual cautery, roentgen ray, or radium fulguration, and excision. It is advisable, even in these early cases, to apply the roentgen rays to the treated area and the neighboring lymphatics when the lesion has been destroyed by some agent other than radium or the roentgen ray. Speaking comparatively of the roentgen ray and radium, there are instances when the latter is of greater value, namely, in roentgen ray cancer, and the growths that occur in xeroderma pigmentosum. Radium is also preferable in epitheliomas developing on leukoplakia, not only on account of the location, but because the results are superior.

2. If the growth is advanced beyond the very early stages, it should be removed by excision and the roentgen ray applied as a prophylactic agent, as already outlined.

3. If, for various reasons, the lesion cannot be excised, it can be removed by the actual cautery or with arsenical paste, and the roentgen ray used as a prophylactic.

4. Finally, there are cases in which, on account of certain complications and difficulties, none of these methods can be utilized. In such instances we can resort to Sherwell's method.

There are no statistics on which to base the value of the roentgen ray as a prophylactic. It has sometimes failed in cases that seemed to be particularly favorable, but it is of real value as a post-operative procedure, and also in inoperable cases.

With regard to sarcoma, early excision, with a wide margin, is imperative. It may be wise, in addition, to have the roentgen rays applied to the site of the lesion and to the neighboring glands as a prophylactic. In inoperable cases, the roentgen ray and radium are very valuable.

LUPUS ERYTHEMATOSUS AND TUBERCULOUS INFECTION.[2]

Weiss and Singer of St. Louis studied carefully 12 cases of the discoid type of lupus erythematosus with regard to a tuberculous etiology. Up to recent years investigators have tended toward the view that lupus erythematosus was in some way related to tuberculosis. At first it was thought to be a true inoculated tuberculosis of the skin; later, especially by the French observers, it was regarded as produced by a toxin from the tubercle bacillus. Later still, much doubt has been cast upon this theory, although many still believe that it is of toxic origin. The tubercle toxin theory was based on the frequent finding of evidence of tuberculosis both clinically and post mortem. It had been claimed that in a large proportion of cases there was a family history of tuberculosis, a positive reaction to the tuberculin test, clinical evidence of tuberculosis, or evidence of tuberculosis discovered post mortem.

Of the 12 cases examined in this series, 10 showed evidence of tuberculosis; 4 of these were chronic tuberculosis, 1 active tuberculosis, and 5 healed tuberculosis of childhood. The statistics of Brocq and others led them to a belief that there was a direct connection between lupus erythematosus and tuberculosis. The writers' statistics correspond in many respects with these, and they might reach the same conclusions. But their deductions, based on the modern conception of tuberculosis, are quite different.

With regard to *family history.* Because quite a large number of cases of lupus erythematosus have a family history of tuberculosis, it is assumed that this is in favor of a connection between the two diseases. Taking an average of the percentage of various authors, it is found that above 43.5% of the cases of lupus erythematosus give a family history of tuberculosis. It is probable that with careful questioning of patients, fully as large a percentage could be found in many other conditions, such as acne, for example.

Tuberculin Test. The writers believe that the positive tuberculin test means tuberculous infection and not necessarily tuberculous disease, and that practically all individuals above the age of twenty and living in large cities react to the tuberculin test. Tuberculin has no effect on uninfected individuals, but practically there are no uninfected individuals. Hence a positive tuberculin test in lupus erythematosus does not strengthen the theory that there is a relation between this disease and tuberculosis.

Clinical Evidence of Tuberculosis. Clinical evidence of tuberculosis can be discovered in an extremely large number of people by modern methods of diagnosis; the writers think that fully 90% of all individuals above the age of 20 and living in cities are subjects of tuberculous infection, or of tuberculous disease. Tuberculous infection in early life is the rule and not the exception, and, as Opie says, by far the great majority of us are vaccinated in childhood against tuberculosis. In the writers' series of cases, 83% showed evidence of tuberculosis, and they have reason to believe that it should be 100%. Only one case showed active tuberculosis, and they think it very improbable that in nine out of ten of their cases a circulating tubercle bacillus toxin was the cause of the skin condition.

Post-mortem Evidence of Tuberculosis. Of late years more and more evidence of the universality of tuberculous infection, as demonstrated post mortem, has been accumulating. Opie has found that of 50 cases dying of diseases other than tuberculosis, in every one there were lesions of tuberculous infection or of tuberculous disease. Hence the finding of tuberculosis post mortem is no good evidence of a relationship between lupus erythematosus and tuberculosis.

It has been shown that fully 90% of the adults who live in large industrial centers are the subjects of tuberculous infection or tuberculous disease, but that practically no cases of lupus erythematosus are seen among the inmates of large tuberculosis sanatoria; and furthermore, there is no similarity between the histopathology of lupus erythematosus and that of tuberculosis.

The conclusions reached by the writers are that no evidence has as yet been presented to show a relationship between lupus erythematosus and tuberculous infection or tuberculous disease, although it has been shown that tuberculosis, past or present, may be demonstrated in practically all cases of discoid lupus erythematosus. This fact should be interpreted only as further evidence of the universality of tuberculous infection, and not as proof of an etiological relationship between the two affections.

ALOPECIA FOLLOWING X-RAY EXPOSURES[3] IN THE WOUNDED.

Frenkel reports a small epidemic of "pseudo pelade," which occurred during the month of May, 1917, among those suffering from ocular wounds in the hospital at Toulouse. In all cases the alopecia was localized in the occipital region and increased rapidly, in some cases exceeding an area the size of the palm of the hand. In all the plaque corresponded to the size of the ocular wound, except in one case where it was in the median line. The wounded were distributed throughout different wards, and had never used the same toilet articles. Eleven observations are then related in detail. It is manifest not only that the alopecia was situated on the same side as the ocular injury, but that in all cases there had been a severe traumatism, which had necessitated enucleation in 6 of them. One would be led at first to think of a nervous pseudo-pelade due to trophic disturbances of a reflex nature, whose point of origin had been the ocular region. But a more plausible explanation was suggested by the fact that all of the subjects had been x-rayed in order to determine the locality of the projectiles which they harbored. It was found that the first appearance of the alopecia occurred almost constantly about fifteen days after their exposure to the x-rays. It was also found that the area of alopecia occupied precisely the same situation as that to which the photographic plaque had been applied. Hence it seemed obvious that there was a direct relationship between the falling of the hair and the application of the radiography. In none of the cases was there any real radio-dermatitis, but simply a systematic epilation of the region which had been in contact with the procedure. It was impossible to discover any fault of technic in these cases, or any general cause. The question then remained: Why did these men, and not others, suffer from the action of the rays? It was found that some of them had been exposed twice on different days, with an interval of less than eight days between the two exposures. In such cases, an anaphylaxis might be invoked. It is also possible that there was a difference in the quality of the apparatus. The hair in the denuded areas began to grow again in from two to three weeks, but the growth was very slow, and it was not before three months that a normal state had been attained in two of the cases.

PRIMARY AND SECONDARY IMPETIGO IN SOLDIERS.

Major MacCormac[4] states that out of a total of 1786 patients admitted with skin troubles into a general hospital in April, 1917, 1411 had either primary impetigo, or impetigo grafted on some other condition, and this latter form may be so severe as to mask the underlying affection. He then proceeds to describe four types or classes of impetigo:

1. True impetigo contagiosa. This rarely occurs among the troops in France, contrary to what would be expected from its prevalence in civil practice. It is known to be caused by the entrance of a streptococcus into some abrasion or cut in the skin, and hence is usually found on the face, hands and arms—regions favorable to inoculation. It is characterized by a primary vesicle which soon becomes changed into a superficial crust, described often as "stuck on." The treatment consists in first removing the crusts by boric fomentations or boric starch poultices, perhaps smeared beforehand with liquid paraffine; the lesion is then treated with 1% of ammoniated mercury in zinc ointment, or, if this is too irritating, Lassar's paste, after washing with 1-1000 perchloride lotion.

2. Ecthyma. This is a deep form of contagious impetigo, and is apt to be situated on the legs and thighs. When fully developed, the lesions consist of a crust covering a purulent ulcer, surrounded by a red border, and somewhat thickened edges. It is often caused by the scratching to relieve itching caused by lice, or follows the friction and rubbing of garments soiled with mud or dirty water, and the lesions may be spread rapidly by autoinoculation. In treating this form, frequent fomentations are indicated, preceded by washing with a 1-4000 perchloride solution. Before this a removal of the crusts, as far as possible, by soap and water is necessary. Afterward antiseptics may be used—perchloride, ammoniated mercury ointment, etc. Sluggish lesions may be painted with a 2% solution of nitrate of silver in sweet spirits of nitre.

3. Impetigo complicating seborrheic eczema. Seborrhea seems to be present to an unusual extent among the soldiers in France. An impetigo is frequently added as a complication to a pre-existing seborrhea or seborrheic eczema, and this condition is characterized, in distinction from impetigo contagiosa proper, by its presence in the beard, mustache and eyebrows, and by the firm attachment of the crusts, as well as by seborrheic lesions being present in other places. This form may co-exist with ecthyma. In the treatment it should be remembered that the condition is an eczema rather than an impetigo. A liniment of zinc oxide, calamine, limewater and olive oil is recommended, followed perhaps by Lassar's paste with 2% salicylic acid, or ichthyol. Boils and conjunctivitis are frequent complications.

4. Impetigo complicating scabies. Almost all the cases of scabies seen in France are complicated with impetigo, as the soldier rarely reports until his skin has become infected with the pyogenic cocci. In these cases the impetiginous lesions are usually grouped over the lower buttocks, the elbows and knees. The situation on the buttocks is very suggestive of scabies. The treatment in these cases of infected scabies is apt to be long and tedious, hence prophylaxis is of great importance. The scabies must first be treated, by a bath, three days sulphur ointment, and a change of clothing. The ecthyma is then dealt with as has been described. There is often a troublesome degree of secondary dermatitis, the itching from this condition being often erroneously attributed to a survival of some of the parasites. In other cases he recommends the application of Lassar's paste with ichthyol during the day, with calamine lotion at night. The ointment should not be applied to any lesions that contain pus.

RHUS DERMATITIS.

Toyama's[5] article embodies an abstract from the Japanese works on this affection, together with a comprehensive survey of the literature of other countries. Of the six varieties of the rhus family that in Japan grow wild, rhus toxicodendron and rhus vernicifera are the most injurious. He notes that the first descriptions of rhus dermatitis came from the Orient from 605 to 609 A.D. in China, and from 923 to 930 A.D. in Japan. The clinical features of rhus dermatitis are well known. The character of the poisonous element has not yet been firmly established. Some have asserted that it is volatile, others that it is non-volatile. Those who hold to the former theory assert that people are poisoned who simply pass under a lacquer tree or in front of a lacquer-ware shop. New lacquered ware has caused a dermatitis in a large number of people, while old lacquered articles are harmless. Maisch, together with other German and Japanese authorities, holds this view. On the other hand, Pfaff, Tschirch and Jadassohn, and others, believe that the toxic agent is non-volatile. The writer's experiments in this direction tend to show that rhus has no volatile poison. Kittens and young rabbits were used, since they have the most susceptible skin of any of the domestic animals. They found that the smoke that is produced by the combustion of lacquer did not inflame a susceptible skin. They seek to explain the common observation that smoke from burning rhus plants is poisonous, by the supposition that a non-volatile substance may be carried by the particles of soot in smoke, and this is fortified by an observation that smoke filtered through glass-wool is not poisonous. An interesting circumstance was the finding of an antique jar, which had been buried in the ground about a thousand years ago, in a ruin in Japan. Inside this jar there was Japanese lacquer, quite dried up. Experiments with this lacquer showed that a petroleum-etheric solution was poisonous, although all of the volatile components had naturally been lost during the many years that it had been buried.

A substance named "urushiol" is claimed to be the principal ingredient of rhus. This may be obtained from the sap of the lacquer tree by dissolving in absolute alcohol and evaporating the alcohol from the filtrate of this solution, and this may be further purified. People who are susceptible to rhus poisoning are also susceptible to urushiol, and cats and rabbits which are susceptible to the lacquer are also sensitive to the urushiol. He could find no difference between the urushiol dermatitis and lacquer poisoning, or poisoning from any members of the rhus family, as regards either the symptoms or histological findings. He considered that the principal ingredient of the ivy is the same, both in its clinical character and its poisonous action, as that of the lacquer. He concludes that the cause of rhus dermatitis is urushiol, a principal ingredient of the lacquer, and that this principal ingredient is the toxic agent.

Assuming that urushiol, a non-volatile substance, is the toxic agent, the writer then seeks to explain the cases of infection at a distance. In the case where the infection is produced by walking under a lacquer tree, he assumes that a small quantity of the sap may be carried to the person by means of the wind, or by insects. Very minute particles of lacquer are sufficient to produce dermatitis in a susceptible skin. The poison may also be conveyed by the pollen. The cases in which poisoning has appeared after passing the front of a lacquer-ware shop may be due to mechanical transportation of the poison. The reason that old lacquer-ware may be harmless depends on the decomposition and recombining of urushiol with time. Persons may be poisoned by contact with lacquer that has adhered to clothing and wools.

Histologically, he found marked changes connected with the sweat ducts in the papillary layer, as well as about the hair follicles. He assumes that minute particles of urushiol reach the skin and are easily oxidized, this process of oxidation causing a poisonous action. The sweat glands and hair follicles show early changes because they offer a ready means of entrance to the poison.

With regard to treatment, the writer warns against the successive application of various medicaments, especially in ointment form, on account of the danger of spreading the injurious substance before neutralization, on the sound skin. For the neutralization or destruction of the urushiol an alkali, nitric acid, and sugar of lead should be used. If it can be proved that there has been contact with rhus, he recommends, as have others, the preliminary application of an alkali. The surface should be rubbed with cotton wet in a solution of sodium carbonate or potassium carbonate in water, or a 1% solution of caustic potash in alcohol, glycerine and water. By the action of this alkali, the lacquer adhering to the skin appears as spots or lines of blackish color, if the quantity is sufficient. These spots and lines may be removed by the application of an alcoholic solution of 1% nitric acid. Then the skin may be washed with soap and water.

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TUBERCULOSIS NURSE.—At the soldier service meeting of the State Tuberculosis Association, Manchester, New Hampshire, it was voted to create an office of a state tuberculosis nurse. The duties will consist of initiating and supervising antituberculosis work in communities, and of following up the men rejected in the draft and from Army camps because of tuberculosis. Tuberculosis dispensaries will be established in cities with a population of ten thousand or more.

Society Report.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

MEETING OF WEDNESDAY, DECEMBER 6, 1917.

The President, DR. RICHARD H. HARTE, in the chair.

EPIDEMIC POLIOMYELITIS: ITS NATURE AND MODE OF INFECTION.

SIMON FLEXNER, M.D., New York: Epidemic poliomyelitis, or infantile paralysis as the disease is variously and, on the whole, erroneously called, is becoming increasingly familiar to us. The disease has become more prevalent also throughout the world. This wide distribution can be attributed to the endemic focus in Northern Europe ever becoming more and more active, which culminated in the severe epidemic outbreak in Sweden in 1905. The severe forms of the epidemic disease and the occasional and sporadic instances of infantile paralysis are essentially the same disease, due to a common etiologic agent. So long as the disease is conceived of as one attended by paralysis, a large number of cases will be excluded. Thanks, especially, to Wickham, we have learned that perhaps the majority of cases in epidemic times are not associated with paralysis. To define epidemic poliomyelitis—so called—I should term it an acute infectious and communicable disease, attended sometimes, but by no means always, by involvement of the central nervous organs, as a result of which incident paralysis often results. The parts of the central nervous organs most frequently involved are the meninges, with which may be and often is associated injury to the grey matter of the spinal cord and brain, leading to muscular paralysis. In its essential nature the disease is an infection. A minute anaerobic microörganism has been secured which fulfills Koch's law of causation. I feel, however, that it is better to wait until this experimental work has been confirmed in other countries in which epidemic poliomyelitis occurs before proclaiming the microörganism as the established cause of the disease. Of first importance is the discovery of the manner in which the microbic cause of poliomyelitis enters and leaves the body. The infectious agent enters and leaves the body by the upper respiratory mucous membrane, and may at last leave the body with the intestinal discharges. Whether there are still other avenues of infection we do not know. Neither do we yet understand the tendency of the disease to reach its height in the late summer and early autumn months, though intensive study is showing that the disease extends throughout the winter, and in two instances mid-winter epidemics occurred in Sweden and Norway. Under the circumstances the disease is to be regarded as communicable from person to person. A simple, readily applied biological test to determine the presence of poliomyelitis is greatly to be desired. Lumbar puncture in 90% or more of instances gives a definite answer, yielding, as it does, a fluid, usually clear, but showing either morphological or chemical changes, or both these changes simultaneously. The mononuclear cells tend to be increased and globulin often is present. These changes, especially during periods of epidemic, should be regarded as presumptive evidences of poliomyelitis infection. As beginnings are being made in respect to specific form of treatment, the employment of lumbar puncture and study of the changes in the cerebrospinal fluid are affording the basis for the application of treatment at the more favorable periods, before possible paralysis has appeared, which may often determine whether the treatment will be effective or not.

SOME PRACTICAL CONSIDERATIONS IN THE ADMINISTRATIVE CONTROL OF EPIDEMIC POLIOMYELITIS.

DR. HAVEN EMERSON, Commissioner of Health, City of New York: There are obvious limitations to the application of scientific laboratory and clinical knowledge in the public control of communicable disease. Furthermore, when the means of transmission, immunization and of detection of carriers of a disease are lacking, the resources of the public health officer are sadly restricted. The use of popular educational publicity will go far to teach parents the necessity of obtaining competent medical advice immediately upon the appearance of fever, pain, digestive disturbance or acute symptoms of any kind in little children. To the adoption of such advice we may attribute the reduction of infectious diseases. A type of direct, practical advice to the public is given in an extract from a circular of information. When such advice has been given the most unexpected and extravagant applications of it may ensue, as evidenced in many a family of children housed for weeks, often in tight-shut rooms, even in July and August. Up to the present there is no evidence that environment has any relation to the origin or dissemination of poliomyelitis. We have no specific diagnostic test, though the spinal fluid, a good history and definite clinical symptoms will, during an epidemic, even in the absence of paralysis, justify a positive diagnosis. In a disease so little seen or recognized in the past in general practice it is not uncommon to lose that agreement among physicians without which it is impossible to obtain public compliance with restrictions or professional coöperation with health officers. The prompt issue of leaflets of information to physicians early in the epidemic will enlist their coöperation and give the essential facts in a form ready for reference. Such a circular of information is given in the paper. Six weeks has been generally agreed to as a suitable isolation period dating from the day of onset, the only adequate basis for this being that, after six weeks infectious material has rarely been obtained from artificially infected monkeys. There are too many undetermined factors to draw conclusions upon the effect of hospitalization upon the distribution of poliomyelitis in New York, although our observations lead us to believe hospitalization decreases the case incidence of the disease. Health officers owe it to the practitioner of medicine to give him every facility to study the clinical phases of the disease. As to general measures of personal restraint directed to the abatement or prevention of an epidemic we are more at sea than in the field of individual quarantine. The identification of travelers is reasonable, but its incompleteness under modern conditions of traffic renders its advisability questionable. Of absolute quarantine I need hardly recall the instances of brutal inhumanity resulting from its application to counties, towns and states against each other. I know of no benefit from such measures, and I know of nothing which has developed such ingenuity in the violation of the laws and such whole-hearted disrespect for reasonable sanitary law. General reporting by the health officer at the point of departure to the health officer at the point of destination of travelers under the age of sixteen years would probably accomplish all that can be expected. While awaiting the receipt of the essential information which will justify a logical and efficient administrative control of epidemic poliomyelitis, the health officer of any community can hardly do better than plan his campaign in accordance with the declaration of the American Public Health Association, which I have taken the liberty of quoting in full in the paper. As a matter of historical interest and to present the result of the experience of the Department of Health of the City of New York, the paper also gives the test of information for field workers, which describes the procedure in the various phases of work last summer.

Dr. C. H. Lavinder of the U. S. Public Health Service: In poliomyelitis not only is our knowledge of the mode of transmission imperfect, but we also lack means of accurate diagnosis and have only incomplete information regarding the incubation period of the disease. In a study of the mode of transmission of disease, laboratory research work and epidemiologic field studies should supplement each other, and their results should be in full accord. The United States Public Health Service in the recent epidemic of poliomyelitis desired to take an extensive view of the New York epidemic, taking New York City as its center, and studying the development of the disease in adjacent States. In order to obtain a cross section of the epidemic, we undertook the intensive study of cases in several places, the total number being more than seven hundred. While at this stage our studies do not justify broad conclusions, many factors indicate that poliomyelitis is a contact infection. From the study of spot maps it seemed quite evident that the disease followed travel routes; moreover, that the disease spread in waves from a center outward. It was also observed that parts of the population escaping the disease were composed of persons less in contact with the general public than others. These and other factors point strongly to the contact theory of the transmission of poliomyelitis. Spinal puncture is a method deserving much wider use in this disease than it has had. Poliomyelitis has been reportable in most of the States since 1909, since which time to 1914, inclusive, there have been 5239 deaths from the disease. There have been, probably, from 1909 to 1915, 40,000 to 45,000 cases. This year we certainly have had in the United States 35,000, with a much higher mortality, indicating that the disease is likely to be one of our important epidemic diseases of childhood. In attempting to meet the difficulties it would seem wise to be perfectly frank with the public; then no one would expect the brilliant results which at the present time are impossible.

Dr. Wilmer Krusen, Director of Health, Philadelphia: From June 1 to December 1 of this year the total number of reported cases of anterior poliomyelitis in Philadelphia was 997; many abortive cases have not been reported, in which cases diagnosis is perhaps impossible. The total number of deaths is 297, a percentage of 29.2. Of the 224 patients treated at home, 125 died, a mortality of 53%; of the 763 treated in the hospital, 172 died, a mortality of 22.5%. It must be admitted that many of the patients dying at home were in a very serious condition when the disease was determined. Density of population, apparently, has no influence upon the incidence of the disease in a given locality. In the 22d Ward of the City, with a population of 10 per acre, had 78 cases; the 3d Ward, one of the so-called slum districts, with a population of 210 per acre, had only 10 cases. Regarding the onset of the disease, 51.4% of the cases occurred in August, 8.9 in July, 31.9 in September, 7.7 in October, 1.5 in November. The popular belief held at the beginning of the epidemic, that the colored race was immune, has not been borne out, since there have been 23 cases among colored children, with 8 deaths. Eighty-eight per cent. of children affected have been under six years of age. A thought, to me of special significance, suggested by the Chief of the Bureau of Health, is that of the diminution of 15 inches in the average rainfall of the present year.

Dr. Theodore H. Weisenburg: We have had in Philadelphia an exceptional opportunity for studying infantile paralysis, having had about 800 cases in the Municipal Hospital, and in many instances also studied the localities and houses from which the patients came, of both the frank paralytic and the abortive types. In the beginning of my study I had no doubt of the contagiousness of the disease, but I now believe that the disease is not so contagious as either Drs. Flexner, Emerson or Lavinder believe. The best argument against contagiousness is the multiple instances of the disease occurring in the same family. We observed that when more than one person in the family was stricken, the symptoms appeared within one or two days of each other. Our experience with the abortive cases was similar. It was not our experience that a number of persons coming in contact with the disease afterward developed it. Moreover, when the schools were opened in Philadelphia in September there was not an increased number of cases, as was expected, but the opposite, the disease gradually diminishing. Dr. Emerson's suggestion regarding the postgraduate study of the disease in municipal hospitals is a very valuable one. Should poliomyelitis reappear in Philadelphia, such opportunity should be given to every physician. I quite agree with Dr. Emerson regarding what he terms the brutal quarantine in the different cities and States. I am entirely opposed to interstate quarantine. To my mind nothing can be gained by keeping healthy children from their homes. I am strongly in favor of isolation of the individual patient. In my experience, lumbar puncture is practically the only therapeutic measure of value which we can employ, and the earlier its use the better is it for the patient. The average physician outside a large city fears to perform lumbar puncture, yet the quarantine measures absolutely forbid the patient being brought to the city, where such treatment can be given.

Dr. Theodore LeBoutillier: Working with the cases of poliomyelitis as they came into the Philadelphia Hospital for Contagious Diseases, our first step was to do a lumbar puncture. This measure is not only one of the best methods of diagnosis, but also of treatment in this disease that we so far have. It relieves congestion, pressure, and, in many cases, pain, to a marked degree. To be efficient, lumbar puncture should be done frequently, as it may be demanded by each individual case. This may be once in 24 hours for some days, once a week, or once in two weeks. In a case studied by the physician in charge, it is frequently very easy to tell when lumbar puncture should be done,—the child complains of some pain, becomes restless, does not have a good appetite, and possibly has some headache; in nine cases out of ten lumbar puncture will relieve the condition. Of course the fluid should be studied for the cell count. Children, three and four months after the onset of the disease, who have recurrences of pain, irritability and restlessness, will be readily relieved if lumbar puncture is again done. Such a case was seen three months after the original attack. Serum, I also believe, is helpful in many cases. Serum from the blood of patients who have had the disease some months or years previously, I feel absolutely sure, has saved the lives of some patients and very materially improved their condition. In other cases in which it has been given too late, in insufficient quantity, or in which it has not contained the antibodies expected, the results have not been so good. We have had practically no bad results where the serum has been given. We could not obtain enough of the serum to give routinely in the quantities desired. We have used a combination of adrenalin chloride intraspinally and the serum intravenously, and our results have been better than when only one or the other was used. It is to be hoped that during 1917 a serum may be produced which, if not so efficient as the diphtheria antitoxin, will at least be more helpful in the control of these cases than anything so far discovered. I would emphasize the importance of early diagnosis, the use of lumbar puncture both as a diagnostic and a therapeutic measure, and the importance of not being afraid to employ this method too frequently.

Dr. G. G. Davis: Apart from the standpoint of the cause and spread of poliomyelitis, its management is important in that it casts upon the community a large number of cripples, with all the consequent deleterious effects. We who were familiar with the original type of the disease regarded it as an acute trouble for a few days with immediate onset of flaccid paralysis and abrupt cessation of the acute symptoms. The cases fell at once to the care of the orthopedic surgeons. As Dr. Flexner has said, the disease is not at present as it has been. We have now the acute onset, the convalescence and the chronic stage of the disease. The acute stage should be treated by the physician. He should have in consultation a person accustomed to guard against the oncoming deformity. Even inside of six weeks there should be provision made in a certain number of cases against the contractures which will probably occur. In the stage of convalescence, the family physician may be the attendant, and he will be confronted with a disease which to the most experienced in its special character is baffling. Let me urge that these cases be watched over by some one skilled in orthopedics and possessing an infinite degree of perseverance and patience. My experience is that improvement does not cease at the end of two years, but that these patients continue to improve as long as we continue to work with them throughout a number of years. Apparatus is used for the prevention of deformity and to facilitate locomotion. Even when employed constantly it does not hinder in any way the recovery of the child. I know of no cases in which so much can be done as for patients such as these, in which the paralysis is often very marked.

Dr. Charles K. Mills: Especially referring to the question of the communicability of the disease, my views have been largely expressed in the remarks of Dr. Weisenburg. I believe the disease is one which we should term as an infectious disease, and probably somewhat or slightly transmissible by human contact. It is striking that Wickham, notwithstanding that he protests against the doctrine of insectile transmission and in favor of the personal contact theory gives scarcely a fact in connection with the environmental condition of the localities in which his hundreds of cases occurred. He spends much space in discussing the fact that the disease spreads along lines of travel, which argument is open to very evident objections. He describes the manner in which the disease radiated from schools regarded as foci, but fails to give us any facts, so far as I recall, regarding the condition of the schools, their environment and the condition of the house and the localities from which the children came. During this present epidemic, with an entomologist and others, I made many personal investigations of the localities in which the cases occurred, including between three and four hundred cases occurring in about twenty wards of the City and in Chester, Montgomery and Delaware counties. In 90% of the localities studied we were struck by the presence of unsanitation and insectile life. I look forward with great anticipation to the publication of the field work of the United States Public Health Service. In the vast majority of the 35 or 40 diseases caused by insects, the host, the carrier, and the nature of the disease have been largely revealed by good field work. Multiple cases in the Philadelphia epidemic occurred in a way which indicated that they were due to a common infection in the majority of cases.

Dr. H. A. Hare: It is my opinion that we shall never have control of epidemics until we have Federal control. I say this because of my observation made last summer. Orders were given in Rhode Island to quarantine against "suspected districts," meaning New York. At the time quarantine was established there was a larger proportion of cases to the total population in Newport than in New York, yet Newport was not quarantined. A health officer of the State warned the hotel-keepers that if such quarantine were instituted, business would be hurt, and appealed to them to do nothing to keep people out of Rhode Island. Had the state of Rhode Island been under Federal control, local people would have had no political pull to interfere with proper ordinances. The thing reached the height of absurdity when a certain number of inspectors were ordered to board and walk through trains and determine whether any of the children on board had poliomyelitis. Regarding the transmissibility of the disease the question arises whether some of our difficulties do not lie in the fact that the disease is transmissible only at certain periods of its existence. At one time we did not know that yellow fever was transmissible until after a certain stage of development.

Dr. A. A. Eshner: Admitting the fact of the occurrence of cases in which paralysis does not develop, we have here an explanation in part for the relatively slight susceptibility to the disease, inasmuch as there may be numerous cases of this sort, and we have learned that an attack of the disease confers immunity to subsequent attack. Also we may have here an explanation of the cessation of the disease through exhaustion of the soil. This fact further may have a possible bearing with respect to the future. On the basis of the statements that have been made, it way be found that in the ensuing year there will be even a greater degree of immunity to the disease than in the past, and it is therefore to be hoped that we may encounter a smaller number of cases next year than in the present.

Dr. A. C. Abbott: With all due respect to the opinions that have been expressed upon the mode of transmission of this disease, I feel that the matter is still unsettled. The question of the seasonal occurrence of the disease has not been satisfactorily answered. While the charts exhibited show the maximum to occur about mid-summer and falling off toward early autumn, and disappearing as cold weather advances, we have a notable exception to this in the epidemic in Sweden. I know of no natural law to which there is not an occasional exception, nor do I recall the circumstances surrounding the outbreak in Sweden in cold weather. I think it is significant that in Philadelphia a large majority of cases were in the parts of the city having the largest number of stables. Another interesting factor in connection with the epidemic is that, with the opening of the schools, although we were having from seven to ten new cases of poliomyelitis a week, there was no increase in the number of cases and that they have rather steadily diminished. With Dr. Hare, it seems to me that at the present time we occupy about the same mental attitude on the transmissibility of the disease as on that of yellow fever before we knew how it arises and is carried. I do not doubt that direct transmission occurs from person to person in poliomyelitis, or that we may have human carriers, but I do not believe that these are the only ways in which the disease is spread.

Dr. John A. Kolmer: Since the appearance of anterior poliomyelitis in Philadelphia, Drs. Freese, Brown, Matsunami, Meine and I have conducted investigations which have shown that a streptococcus and a diplococcus occur in a large percentage of cases of poliomyelitis in the brains and cords and in various internal organs. Our experiments have failed without exception to produce experimental poliomyelitis with these cultures. It appears evident to us that streptococci and diplococci are widely distributed in poliomyelitis, and at present we regard them as secondary invaders growing in symbiosis with the true organism in a manner analogous to the growth of streptococci in persons suffering from scarlet fever.

Dr. Emerson (closing): We have certain proved data upon this subject, but we are not yet ready to speak positively upon the matter. In New York we have had on Barrel Island the most insanitary conditions, and of the 350 children there was not a single case of poliomyelitis. Under our modern control we consider the school as our main point in the control of communicable diseases of children and not as a site of communication. Our most exhaustive study of possible insect carriers showed that we could attach no suspicion to this theory. Every case discharged from our hospital is followed by the Committee on After-Care, so that each case will be under the care of a competent orthopedic surgeon, usually in coöperation with a neurologist. The organization and supervision of this after-care work has been made possible by the generosity of the Rockefeller Foundation.

Dr. Flexner (closing): In the matter of the mode of transmission of this disease I want to warn against being misled by analogies. Reasoning by analogy is notably unsafe, and I think it unfortunate that the analogy of yellow fever was raised this evening. Had it been possible to communicate yellow fever to a lower animal, we should not have had to wait for Dr. Reed and those self-sacrificing American soldiers and civilians to perform the experiment resulting in one of the greatest contributions to epidemiological research and sanitary science the centuries have produced. In the present instance, however, we are dealing with a disease that can be communicated to the monkey in all its forms,—abortive meningitic and paralytic. For the sake of conviction, we may for the moment throw out of consideration the abortive and meningitic types of the disease because they may in individual instances be open to question, but you cannot similarly disregard the paralytic example because it corresponds precisely with what is so commonly seen in human beings, and is everywhere recognized as the type of poliomyelitis, besides which the lesions in the monkey exactly reproduce those present in fatal human cases. In the study of transmission account must be taken of susceptibility and ability to trace the source of infection in large and actively moving communities. Since there is no doubt that the active agent of the disease is thrown off by the human body, our obvious duty is to use every measure to limit dissemination on the basis of established knowledge. Should fuller knowledge be obtained we must act upon that. But it is in the highest degree unsound to pursue a phantom and neglect that which is established.

Book Review.

Manual of Splints and Appliances for the Medical Department of the United States Army. Report of a Board Convened for the Purpose of Standardizing Certain Medical Department Supplies. Lieut.-Col. William L. Keller, M.C.; Major Robert B. Osgood, M.R.C.; Major Alexander Lambert, M.R.C.; Major Joseph A. Blake, M.R.C.; Captain W. S. Baer, M.R.C.; and Captain Nathaniel Allison, M.R.C. New York: Oxford University Press, 1917.

This book is the outcome of a meeting of a board of medical officers appointed by Special Order No. 73, A. E. F., August 20, 1917, to investigate and report upon the advisability of standardizing certain appliances to be employed and issued by the Medical Department of the United States Army. The board met as directed and in its report recommended that in addition to standardizing the manufacture of splints and appliances, a manual describing their proper use be published and distributed to all United States Army medical officers at home and abroad. In accordance with this recommendation, the *Manual of Splints and Appliances* has been issued. It was unanimously decided by the board that the splints and appliances officially adopted by the American Army should be constructed with a view to efficiency and correct mechanical principles; that they should be simple of design and of low cost of construction, and easily transportable, so that an efficient splint may be applied at the front and cause no trouble until the patient reaches the base hospital.

The board has concluded that with the three types of wire-ring traction and counter-pressure fixation splints embodying the Thomas principle, the Jones "Cock-up" "Crab" wrist splint, the long interrupted Liston splint with adjustable foot piece, an anterior thigh and leg splint, Hodgen type, the Cabot posterior wire splint, the wire-ladder splint material, light splint wood, and plaster-of-Paris bandages and Bradford frames, treatment of all bone and joint battle casualties may be efficiently carried out at the front, and even at base hospitals. Therefore in this Manual the board recommends the use of these splints, and describes their construction and application fully, also discussing primary dressings and the line of mechanical after-treatment found most constantly to favor the healing of wounds, the union of bones, and the restoration of function. The board believes that it is the first duty of all surgeons to become familiar by actual practice in applying the splints to living models, with the methods which it recommends, the mechanical principles underlying these methods—namely, fixation and traction—and the details of the apparatus advised.

The manual is well illustrated with a series of 43 descriptive figures, which form a half of its substance, and has a number of blank pages for memoranda.

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THE NURSING CRISIS.

A PAMPHLET dealing with the nursing crisis, by Dr. S. S. Goldwater, has been published recently. It describes the efforts which are being made to satisfy the nursing requirements of the war, and suggests a way out of the difficulty. The Government's task of obtaining a nursing organization of 50,000 women to serve over 400,000 sick and wounded is a problem which has not yet been solved conclusively. The number enrolled at present is a little over 9000, about one-fifth of the total required. The difficulty lies in the fact that the country cannot spare the number of graduate nurses that the army requires, nor can the training schools produce new graduates in sufficient numbers to satisfy the needs of both the military and the civil population. Shortage of nurses has already become apparent in hospitals and private practice. To catch up with the military program, the enrollment of nurses for military service during the coming year will have to be nearly 2000 a month. How is this to be done? The number of pupils now enrolled in the training schools of the country is approximately 40,000; these schools cannot turn out more than 11,000 graduates annually, and of these, it is estimated that only one-third will enter military service.

Efforts have been made to increase the supply of graduating nurses. A direct appeal has been made to the young women of the country to enter the nursing profession as a patriotic duty, but the results have not been satisfactory. Although a small proportion of the training schools are receiving applications in excess of their capacity, the majority are unable to obtain even their normal supply of pupils. In November, 1917, it was reported that training schools of the country were credited with an increase of 2600 over the previous year. This number, after more than six months of actual war and persistent efforts to increase the number of pupils in every part of the country, shows that industry, business, and professions are competing successfully for the services of women. Two suggestions which have been made are considered by the author to be perilous to the standards of nursing: the first is to lower temporarily the established requirements for admission to training schools; the second is that a sufficient number of "practical" nurses or attendants be added to army service. Another suggestion—that the Medical Department of the Army inaugurate training schools of its own—would have a disastrous effect upon civil hospitals and civil population.

Dr. Goldwater suggests as the best way out of the difficulty "the training of a large number of non-professional, voluntary war nursing aids, enlisted for the period of the war only, and composed of a class which will not take up nursing professionally under any circumstances, but which is willing to give gratuitous hospital service during the emergency." Such women can be obtained quickly and in large numbers, and civil hospitals stand ready to furnish the necessary training facilities. A standard course of training has been devised by a group of the most competent training school superintendents in the country. The American Red Cross has already given the theoretical part of this course to more than 10,000 women. Among the 1500 training schools of the country, there should be no difficulty in finding 300 which are capable of training twelve nursing aids per month thereby providing the army with 50,000 nurses' assistants by July, 1919. These women belong almost wholly to the leisure class. They are the only labor reserves that the country possesses, and they can be brought into the nursing field without lessening the available supply of workers for any essential industry. These women are willing to serve, and should be prepared now, for in no other way can the war nursing problem be solved.

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CIVIL AND MILITARY MORTALITY.

Much unauthoritative information has been circulated concerning the enormous mortality of modern warfare, particularly of this war. The mortality of medical men was placed at an extremely high figure, and may have been intended to discourage enlistments. No doubt that warfare has its mortality among all classes in military life, but the figures accepted have been refuted both by the American and the British authorities. Whatever increase in mortality there is in modern warfare as a result of the newer instruments of destruction and precision, is overbalanced by the enormous mortality from disease in more remote warfare. Moreover, modern military medicine, sanitation and surgery have accomplished wonders not only in saving life that would in previous wars have been lost, but also in rehabilitating the disabled. It is estimated that in the three and one-half years of warfare the total mortality has been about seven per cent.; for a year, about two per cent. The London Prudential Life Insurance Company gives the mortality from war at 30 per 1000 per annum. But the mortality in peace time among men of the same age is about 10 per 1000 a year. Deducting this to arrive at the actual war figures, only about 20 per 1000, or two per cent., die as the direct result of war. The tendency of military life is rather for a reduction of the mortality because of the discipline of the men and because a separate and important branch of the military life and military operations is concerned only with the life and health of the soldier. The drawbacks to the carrying out of sanitary principles or medical or surgical measures do not exist in warfare. In civil life, moreover, the mortality drops only where the community can take care of the health measures without the necessity of individual coöperation. In this way typhoid fever has been reduced over forty per cent. by the improvement in the water supplies and sewage disposal of communities. On the other hand, there has been an increase of over one hundred and five per cent. in the mortality from the degenerative diseases, all of which may be justly ascribed to improper personal living and abuse. Included in this category are alcohol, syphilis, over-eating and sedentary life, over-work, etc. No community can properly control these. After pointing the way, the individual must be left to carry out the instructions. In military life, however, the individual is so much under control that almost every factor that would tend to an extrinsic increase of mortality can be controlled. The control of venereal disease and alcoholism in the warring countries, especially among the troops, is the best example in point. The carrying out of sanitary measures or the acceptance of prophylactic treatment against such diseases as typhoid or smallpox is not within the discretion of the soldier, with the result that typhoid is now hardly known in military life.

But while the military mortality is somewhat higher than the civil, when we contrast the military mortality with the infant mortality of communities in peace times we find a vast difference in favor of warfare. It is estimated that one-fifth of the infants die during the first year, and that it is not unlikely that one-half of the people born into this world die before they are 23 years. It is true that the reduction in infant mortality in recent years, from the control of infectious disease, from better prenatal and postnatal care of the child, and from a better adjustment of the feeding problem, has been large, so that the figures are continually in need of revision. Yet it is true that, whatever the actual statistics, about fifty per cent. of the diseases of infancy and childhood are preventable. The infant mortality is seven times the military mortality.

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URBAN AND RURAL HEALTH CONDITIONS.

The time-honored conception that the health, physical condition and longevity of the rural inhabitant is better than the city inhabitant is not borne out by recent observations. No superiority was shown by military registrants from the country over those from the city. Indeed, the results of these examinations seemed to favor those coming from urban communities. Moreover, the general health of urban communities is far better than the rural. It is best in large cities and ranges down to the poorest in the smallest rural communities. Much of the health of a community is dependent upon the amount of money the community spends in the conservation of its health. No amount of individual effort in the direction of health can avail as much as a small amount of attention paid by the entire community to the health. Within certain limits, it is aptly said health is purchasable. It must be remembered that such diseases as typhoid fever, hookworm, malaria, etc., are essentially rural diseases. They not only keep the morbidity incidence of a particular certain rural community high, but, as in the case of typhoid, help to raise the morbidity incidence of communities remote from them. Much of the urban typhoid fever is of direct rural origin. The crude and unsanitary privy conditions do much to spread rural disease. Even as a mere inconvenience these form the greatest bar to country life. Fly life with all its evils flourish where open and unsanitary privies are used or where manure heaps are not protected. Probably the greatest factor in city health is its sewage system, something that even the larger towns cannot afford. The same applies to water systems. They are all matters of money, and unless such expenditures can be afforded, the health of the community must suffer. It is the wealth of the cities which makes these necessities possible.

The open air life of the rural inhabitant is, unfortunately, only a very limited affair—limited to the shorter or longer period of soil fertility. In the cold months his confinement is almost absolute. Bad roads and other conditions of country life make out-of-door life almost impossible. Whatever is gained in the summer is lost during the winter. The winter diet of northern farmers of the less affluent type is apt to be very poor in quality and much unbalanced. On the other hand, the benefits of country life in general, and particularly for the city man, cannot be overestimated. But the life of the city man in the country is not the same as that of the country man in his own surroundings. For the tubercular or the tubercular type the country means a change from confinement to open air. It means a definite regimen with respect to food, rest and exercise. With him the change is the all-important element. No doubt country life is conducive not only to better health for the individual, but for the race, but not unless country life can be made sanitary, at least in the most essential points. Civilization demands now not only sanitation but some conveniences. Until the Public Health Service took up the work of rural sanitation, little was understood about the bad conditions obtaining in rural life. Many of these abuses are fast disappearing. Bringing rural sanitation to its logical conclusion must raise the standard of the race, because on the soil depends the life of the race. No marked movement back to the soil can be successful unless the sanitary conditions of the country are adjusted.

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SURGERY IN THE AGED.

THE notion that age alone presents an insurmountable barrier to successful surgery is no longer held among progressive surgeons. The hesitancy of surgeons to operate upon individuals in whom there is apparently no other contraindication will work to deprive many of much-needed surgery, and in imperative surgery this hesitancy to operate often delays surgical treatment beyond the time when it can be of any value. It is unjust to deprive the aged of the benefit of surgery or to allow them to die from surgical conditions which in the young would not evoke this hesitancy. This dilatory method with respect to the aged is, in effect, euthanasia, and has, of course, no place in medicine. Age of itself is not a pathological condition; rather it is purely physiological. Unfortunately, however, age is very often accompanied by pathological conditions, but the degree of such pathological involvement need have no bearing on the age of the individual. In effecting surgical measures upon the aged it is necessary to consider only these accompanying pathological conditions in determining surgical risk. As a general rule, it can be said that the aged possess less vitality, their power of repair and regeneration is somewhat impaired, and that infection is more likely to occur in the less resistant tissues than in the young and vital. In any event this difference between the young and the aged is relative only to the classes, and each individual case must be looked into on its individual merits. Hemorrhage must be guarded against in surgery of the aged because they have very much lessened power of regeneration of this tissue. When the aged patient has arteriosclerosis, caridac, renal or other organic disease he is a poor risk not alone because of age, but rather because of these conditions. Besides, a patient with these degenerative conditions is much older than even his years.

A great deal of the surgical risk everywhere is embraced in the administration of the anesthetic. Here again, age is no special bar. Even heart lesions, when compensated, or albumin in the urine are no bar to well-selected and expertly given anesthesia. On the other hand, fatty heart, or myocardial change generally, or fatty or epithelial casts in the urine render anesthesia more hazardous. Chronic bronchitis is usually a bar to the use of ether, because of the tendency to pneumonia, but even this danger is very much lessened with the use of nitrous-oxid oxygen. However, in many where the bar to operative surgery is the administration of a general anesthetic, the high development of local anesthesia makes it possible to do them without incurring this danger. Well planned and rapid surgery, preceded by proper preparation and followed up with good nursing, reduces the hazard almost to the normal. It must be remembered that the aged represent the survival of the fittest, who must have lived a normal life to have reached age, and that their state of preservation and previous good constitution may overbalance any seeming disadvantages of old age.

MEDICAL BOOKS AND PERIODICALS AT CAMP DEVENS.

On the last page of this issue of the Journal, is published a request from Dr. Joslin for the gift of standard medical books and recent periodicals, which are wanted for the library of the Base Hospital at Camp Devens. These books and journals should be sent to the Boston Medical Library, whence they will be forwarded to Camp Devens, where they will be placed in rooms, the cost of whose construction is being privately paid by a lady, the wife of a physician in the service. These will constitute a permanent home for the library, even after the present war needs of the camp are over. We cannot too strongly urge upon physicians the desirability of contributing modern books and recent periodicals, of date not earlier than 1915. They will be of genuine value and help to those of our profession who are bearing the medical burdens of the war, and will also afford evidence that we who stay at home are not forgetful of our small part or unmindful of our duty and obligation.

MEDICAL NOTES.

Progress of Birth and Death Registration in the United States.—The recent inclusion of Hawaii has extended beyond the limits of Continental United States, the area for which the Census Bureau annually collects and publishes death statistics. Within this area now reside about 73% of the total population of Continental United States and Hawaii. It comprises, in all, 27 States, 43 cities in other States, the District of Columbia, and the territory of Hawaii. East of the Mississippi the only States not included are Alabama, Delaware, Florida, Georgia, Illinois, Mississippi, and West Virginia; while west of the Mississippi the only States included are California, Colorado, Kansas, Minnesota, Missouri, Montana, Utah, and Washington.

The annual collection of death statistics from States and cities maintaining adequate registration systems was begun by the Census Bureau in 1902, the first report covering the calendar years 1900 to 1904, inclusive, and for each succeeding year a separate report has been published. The original registration area contained 40% of the total population of the country. It remained unchanged until 1906, since which year it has shown an almost uninterrupted increase in geographical extent and in proportion of total population, until at present it contains nearly three-fourths of the country's inhabitants.

In birth registration highly satisfactory progress has been made during the past two years, although there are still a number of States in which adequate death registration prevails, but in which the registration of births has not yet reached a sufficiently close approximation to completeness to justify the acceptance of the local records by the Census Bureau. The birth-registration area, as at present constituted, comprises 19 States—the six New England States, New York, Pennsylvania, Maryland, Virginia, North Carolina, Kentucky, Ohio, Indiana, Michigan, Wisconsin, Minnesota, Utah, and Washington—and the District of Columbia. This area is estimated to contain about 51% of the total population of the country, as against about 31% when the collection of birth statistics was begun, a little more than two years ago, from an area comprising the six New England States, New York, Pennsylvania, Michigan, Minnesota, and the District of Columbia.

This growth, in so short a time, is very gratifying indeed. It is, however, unfortunate that in the United States the registration of vital phenomena has thus far depended, first, upon adequate state or municipal legislation, and, second, upon the adequate enforcement of that legislation. As a result, some States and municipalities maintain efficient registration systems while others do not. Until the matter is placed under Federal control or supervision it is not likely that reliable birth and death records, approximating completeness, will come into existence throughout the entire United States. Since the military registration of June 5, 1917, the desirability of maintaining such records has become apparent to all.

St. Mary's Hospital.—St. Mary's Hospital, Rochester, Minnesota, has submitted its twenty-eighth annual report, for the year 1917. It includes a description of the hospital, its grounds and buildings, capacity, and equipment, its fire protection, operating rooms, heating, and ventilation. The Training School for Nurses is also described. The report of the Sisters in charge shows a total of 8,336 patients treated. The surgical operations are recorded. The report includes also an obituary of the consulting physician, Dr. A. W. Stinchfield.

Loomis Sanatorium.—The twenty-first annual report of the Loomis Sanatorium, in Sullivan County, New York, for the treatment of tuberculosis, has been submitted for the year 1917. The report contains a brief description of the sanatorium, its location, grounds, and buildings. Changes in the administrative staff are recorded. The Treasurer's report shows that, in spite of the increase in cost of all commodities, careful expenditure has resulted in an excess of revenue over expense. Outstanding indebtedness, however, is still a burden to the institution. The medical report shows that during the year, 354 patients have been admitted and 349 discharged from all divisions of the Sanatorium. Details of treatment are given. Amusements, gifts, donations, and the needs of the Sanatorium are mentioned. The report includes, also, a certificate of incorporation, an order for changing the name of the institution, a supplementary certificate for changing the time for holding the annual meeting, and the by-laws of the Sanatorium.

Cost of Radium.—The National Radium Institute and the Bureau of Mines have developed a more efficient process for the manufacture of radium out of the carnotite ores of Colorado and Utah. The bureau now has as its share more than $180,000 worth of radium for use in the sciences; this was procured for an expenditure of less than $38,000. The bureau has turned over to the National Radium Institute about six and one-half grammes of radium and has given to the country a method for producing pure radium compound from the ore for one-third the current price of radium. Everything in the laboratory to the experiment station at Golden, Colorado, has become so charged with radium that it is impossible to continue the accurate measuring of the radium. It has become necessary to obtain a room in one of the other buildings in order that this work may be completed.

Conference of Public Health Officials.—Important matters affecting the relations of the State and Federal health authorities to the conduct of the war will be considered at the annual joint conference of the United States Public Health Service with State and Territorial Health Officers, to be held in Washington, D. C., on June 3 and 4.

The sanitation of extra-cantonment areas, especially as related to the work of the State and local health authorities, will be one of the subjects on the program. Reports will be made as to the success of the coöperative arrangement, developed during the past year, for preventing the interchange of disease between civil and military populations.

Attention will also be given to the control of venereal diseases, cerebrospinal meningitis, typhoid fever, trachoma, hookworm, and pellagra in relation to the health of the military forces. Each of these diseases will be discussed separately; but all of the communicable diseases will receive more or less consideration in their relation to the public health during the war.

Other subjects will be: the relation to the public health of industrial hygiene and sanitation, especially in war industries; the care of the health of tuberculous soldiers on their return to civil life; the use of records of drafted men for public health purposes; effects on the public health of the forthcoming shortage in the medical profession.

Among the subjects not so closely related to the war are: the securing of better morbidity reports, and the question of pure water supplies for railroads. There will be reports of standing committees in regard to many of the subjects outlined above and in regard to the sanitation of public conveyances, rural sanitation, and increasing the efficiency of the conferences.

The sessions will constitute the 16th annual conference of State and Territorial health authorities with the United States Public Health Service.

WAR NOTES.

Death Rate in Army Camps.—The death rate at National Army and National Guard camps last week was the lowest since last November. Total deaths were 162, against 168 the week before. There was an increase in cases of pneumonia and scarlet fever.

In the week ending May 10, |8 sick and wounded soldiers from the expeditionary forces in France were landed at American ports; the week before 148 were landed.

Carrel Made Commander of Legion of Honor.—Dr. Alexis Carrel, of the Rockefeller Institute, has been promoted to the rank of commander of the Legion of Honor by the French Government. M. Mourier, under-secretary of State for medical service, recalled Dr. Carrel's biological discoveries, his method of grafting bones, as well as his system of treating wounds.

Birth and Death Rate in Germany.—A report, compiled by the local Government Board of London, shows a fall in the birth rate in Germany during the three years, 1915-17, inclusive, equivalent to the loss of 2,000,000 infants. Forty per cent. fewer births occurred in 1916 than in 1913. These figures are compared with a decrease of 10 per cent. in the birth rate in England and Wales.

The infantile death rate in Germany is 50 per cent. higher than in England and Wales. This fact has led to a large extension of infant welfare work in Germany. In 1913, the infant mortality rate in Germany was 151 per thousand, as compared with 108 in England and Wales. The rates in 1914 for Prussia, Saxony, and Bavaria were, respectively, 164, 173, and 193 per thousand. An abnormal increase in infant mortality in the first months of the war was shown by the fact that in Prussia, in the third quarter of 1914, the rate rose from 128 to 143; in Saxony, from 140 to 242, and in Bavaria from 170 to 239.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending May 18, 1918, the number of deaths reported was 242, against 252 last year, with a rate of 16.09 against 17.01 last year. There were 35 deaths under one year of age against 45 last year.

The number of cases of principal reportable diseases were: diphtheria, 76; scarlet fever, 31; measles, 308; whooping cough, 53; typhoid fever, 3; tuberculosis, 68.

Included in the above were the following cases of non-residents: diphtheria, 19; scarlet fever, 6; measles, 2; whooping cough, 1; tuberculosis, 4.

Total deaths from these diseases were: diphtheria, 6; measles, 4; whooping cough, 4; tuberculosis, 28.

Included in the above were the following non-residents: measles, 1; tuberculosis, 2.

Massachusetts Dental Society.—At the fifty-fourth annual convention of the Massachusetts Dental Society, an exhibit was held in Mechanics Building by manufacturers of dental supplies. Among the new things presented was a form of gold which is said to give dentists none of the annoyances they so often encounter in packing gold in small cavities. Miss Margaret Kay told the dentists of her observations in France of the wonderful facial reconstruction work that is being done. At the Councilors' meeting the following officers were elected: president, Dr. George C. Ainsworth of Boston; vice-presidents, Dr. William J. Simpson of Pittsfield; secretary, Dr. J. Arthur Furbish of Boston; assistant secretary, Dr. Albert

W. Day of Worcester; treasurer, Joseph T. Paul of Boston; auditor, Dr. C. Edson Abbott of Franklin.

THE NATIONAL PUBLIC SCHOOL SPEECH TEACHERS' ASSOCIATION.—A meeting of the National Public School Speech Teachers' Association was held at Fall River on May 9. Dr. Walter B. Swift, president, read papers which dealt with the medical, psychological, treatment, and educational aspects of speech correction. Dr. Swift also explained Cleveland's plan to spend $10,000 annually to install his methods and systems in public schools. Other papers on "How Speech Drill Improves Grade Work," were read by Misses Elizabeth Self, Vera Allen, and Marguerite Franklin.

BILL INSURING "PURITY" OF VACCINE VIRUS.—At the hearing before the Committee on Public Health, which met to review the bill recently introduced insuring the "purity" of vaccine, many objections were raised. The opponents of the bill claim that, if passed, it would prevent vaccination. Dr. Ernst of the Harvard Medical School said that the passage of the bill would make it impossible to secure vaccine virus, for, "it is practically impossible to produce virus which does not contain other elements in addition to that element specifically desired." Claude Allen, of the Massachusetts Pharmaceutical Association, said that the law would impose hardship upon druggists, who do not know the quality of virus they sell. State Commissioners of Health McLaughlin and Kelley and Dr. Cody also objected to the bill.

President Woodward, of the Massachusetts Medical Society, presented a bill which provided that certificates of exemption should be required in the private and parochial schools and colleges as well as in the public schools; no unvaccinated child should be admitted unless a certificate proving his inability to submit to vaccination is presented. This legislation is favored by presidents of several colleges and many interested in parochial schools.

MASSACHUSETTS GENERAL HOSPITAL TRAINING SCHOOL FOR NURSES.—The annual report for the year 1917 of the Massachusetts General Hospital Training School for Nurses gives evidence of the pressure which the war has made inevitable. The most important event has been the organization of a Base Hospital, which was mobilized last June for active service in France. It has been deemed advisable to send into army and navy hospitals only graduate nurses. One hundred and seventeen nurses have gone across to serve under British, Canadian or American Expeditionary Forces since the beginning of the war.

The School has been enlarged to meet the needs of the new private hospital opened last spring, and to render necessary aid in the far greater needs of this country and its Allies. Including those who are either graduates, pupils, probationers, affiliated, or post-graduates, the School has included 254 women. The Ladies' Advisory Committee has given efficient and valuable service throughout the year. During last summer, 74 "nurses' aids" were admitted to the wards for ten days' practice work, assisting nurses in their various routine duties. Because of the unusual demands upon its resources and the increased cost of hospital supplies, the need of increased financial support is felt in equipping young women to meet the needs of the world.

The report includes the names of those enrolled in Army Base Hospital No. 6, and a list of graduates and their present occupations.

BABY HYGIENE ASSOCIATION.—The ninth annual report of the Baby Hygiene Association has been submitted for the year 1917. It contains a statement of the purpose and methods of the organization. Statistics are given which cover the wards, the number of babies supervised, nurses' visits to homes, and the finances of the organization. In the past year the Association has rendered valuable service to the community by means of its fifteen infant welfare stations. The health of babies under one year of age is the primary concern of the Association; the work is being extended, however, by increasing the age limit in some sections. The organization is particularly interested in the National Campaign for Child Conservation. The work for the past year has been very successful, for the infant mortality rate for the city was the lowest on record.

FRAMINGHAM COMMUNITY HEALTH STATION.—The Framingham Community Health Station has published Monograph No. 1 of the general series dealing with the program of the Demonstration. It contains the members of committees and staffs, and an acknowledgment to the non-local agencies who have assisted in special phases of the program. The main objects and activities of the Demonstration are summarized. Mention is made of the gift of $100,000 by the Metropolitan Life Insurance Company, contributed for conducting a community experiment in the control of tuberculosis. The need of continuing the work through the period of the war is emphasized. The steps taken by the Demonstration are classified under three divisions: preparatory steps,—dealing with staffs and communities;—community diagnostic steps,—concerning the environment and the people themselves;—and community treatment. Thus far the health experiment has demonstrated the importance of sympathetic coöperation from local and outside agencies, as a basis for community and social control over disease-producing factors.

Harvard Professors Promoted.—The Harvard board of overseers have promoted three members of the medical faculty to full professorships. Dr. Richard C. Cabot has been elected clinical professor of medicine; Dr. Eugene A. Crockett, Le Compte professor of otology; and Dr. F. S. Newell, clinical professor of obstetrics.

Quincy Probation System.—A new plan in connection with the probation system has been put into effect in Quincy. Clinics are to be held in the probation officers' rooms on the third Wednesday of each month. They are designed to offer an opportunity for those working in the reconstruction of a family, where there is a problem of alcohol or drug involved, to consult with those in charge of the clinic and obtain expert advice.

Poliomyelitis Clinic at Haverhill.—Dr. Arthur A. Legg of Boston, assisted by twelve workers of the Harvard Infantile Paralysis Commission, conducted a public clinic at Haverhill for the local Board of Health. The fifty patients examined showed marked improvement as a result of the after-treatment which has been given them for eight months by the local health authorities. Haverhill is the first municipality in the State to furnish free after-treatment by trained workers.

Dickinson Hospital.—During a six days' canvass in Northampton, $125,000 has been raised for the Dickinson Hospital.

Training School for Nurses.—Invitations are issued for the graduating exercises of the Training School for Nurses of the Boston City Hospital, to be held in the Cheever Amphitheatre, on Friday, May 31. There will be a reception from five to six o'clock at the Vose House.

Tufts Dental Clinic.—In a recent issue of the Journal, we noted that the Dental Clinic at Tufts College Medical School had been destroyed by fire. The fire occurred on Sunday morning, and, though important damage was done, work in all departments of the Dental School was resumed on Monday and has continued in full force ever since.

Children's Pavilion of the Sharon Sanatorium.—The directors of the Sharon Sanatorium have issued invitations for a reception on Saturday, June 8, for the opening of the new Children's Pavilion of the Sanatorium. Trains leave the South Station for Sharon at 12.30, 1.45, 2.33, 3.29, 4.28 p.m. (Back Bay Station, five minutes later.) Return at 3.16, 5.03, 6.12 and 7.10 p.m. Carriages to and from the Sharon Station. Visitors wishing to drive by motor (20 miles from Boston) are advised to take the route *via* Mattapan Square, Canton Avenue (Milton), through Canton to Sharon. The Pavilion is intended to be a combined sanatorium and school for children under fourteen years of age who show symptoms of early pulmonary or glandular, non-surgical tuberculosis.

Children of parents with limited means only will be admitted. Applications to be made to Dr. Walter A. Griffin, Sharon, or Dr. Henry I. Bowditch, 86 Bay State Road.

Laboratory for Cancer Research.—A new laboratory building for the Huntington Memorial Hospital for Cancer Research is to be erected, at an estimated cost of $60,000. The basement of the addition will contain a vault for the storage of radium, for experimental work in radioactivity, and rooms for the installation of high-powered x-ray apparatus. There will be also a chemical laboratory, a clinical laboratory, a suite for the use of resident physicians, and a carpenter shop. On the first floor there will be waiting rooms for out-patient cases, large laboratories for bio-physics, rooms for x-ray and radium treatment, and a women's dressing room. The ground floor will be given up to laboratories of pathology and biology. The top floor will be for the accommodation of the domestic service of the hospital. Work on the addition will be delayed by the war. Dr. Robert B. Greenough is the surgeon in charge of the hospital.

The Massachusetts Medical Society.

NOTES FROM THE DISTRICT SOCIETIES.

District Correspondents.

Berkshire, A. P. Merrill, M.D., Pittsfield.
Bristol North, Arthur R. Crandell, M.D., Taunton.
Bristol South, Edwin D. Gardner, M.D., New Bedford.
Essex North, T. N. Stone, M.D., Haverhill.
Essex South, H. P. Bennett, M.D., Lynn.
Hampden, Laurence D. Chapin, M.D., Springfield.
Hampshire, E. E. Thomas, M.D., Northampton.
Middlesex South, William C. Hanson, M.D., Belmont.
Norfolk South, Daniel B. Reardon, M.D., Quincy.
Plymouth, Alfred C. Smith, M.D., Brockton.
Worcester, Ernest L. Hunt, M.D., Worcester.

Bristol South District Medical Society.—The annual meeting of the Bristol South District of the Massachusetts Medical Society was held at the Public Library, New Bedford, Mass., on Thursday, May 9, 1918, at 5 p.m.

Lieutenant Patrick Manning, M.R.C., of Camp Devens gave us a talk on "Military Medicine."

The following officers were elected:

President, J. A. Barrie.

Vice-President, E. D. Gardner.

Secretary and Treasurer, A. J. Abbe.

Councilors: E. F. Cody, C. F. Connor, A. B. Cushman, W. A. Dolan, R. W. Jackson, A. C. Lewis, A. H. Mandell.

Censors: W. A. Dolan, W. E. Blaine, W. T. Learned, C. J. Leary, S. V. Merritt.

Nominating Councilor, C. F. Connor. Alternate, R. W. Jackson.

Commissioner of Trials, W. E. Synan.

After the meeting we had a dinner at the Wamsutta Club.

We have had 14 or 15 men join the M.R.C. out of a membership of about 65. I think we have about 30 men in the town who have joined the M.R.C., not all of these belonging to the Massachusetts Medical Society.

Edwin D. Gardner, M.D.

Hampshire District Medical Society.—The annual meeting of the Hampshire District Medical Society was held on May 9, 1918. The following officers were elected for the ensuing year:

President, H. G. Rockwell, Amherst; Vice-President, W. A. Adams, Northampton; Secretary, C. T. Cobb, Northampton; Treasurer, J. G. Hanson, Northampton; Librarian, F. E. Dow, Northampton; Correspondent, C. T. Cobb, Northampton; Commissioner of Trials, J. G. Hayes, Williamsburg.

Censors: A. G. Minshall, Supervisor; S. A. Clark, Northampton; J. G. Hayes, Williamsburg; N. C. Haskell, Amherst; C. A. Byrne, Hatfield.

Councilors: A. G. Minshall, Northampton; J. G. Hanson, Northampton; O. W. Cobb, Easthampton; the President, ex-officio.

Councilors for Nominating Committee: A. G. Minshall, Northampton; J. G. Hanson, Northampton, alternate.

C. T. Cobb, *Secretary and Correspondent.*

Miscellany.

MEETING OF STATE COMMITTEES OF THE MEDICAL SECTION OF THE COUNCIL OF NATIONAL DEFENSE.

In a recent issue of the Journal, we published a report of the annual meeting of the General Medical Board of the Council of National Defense, at Washington, D. C., on Sunday, May 5, 1918. The following report of the meeting on Saturday, May 4, of the State Committees of the Medical Section, in conjunction with the State Activities Committee and the General Board, has been issued from the Government printing office. At this meeting the Journal was represented by Dr. Walter P. Bowers of the Advisory Committee, and by the Editor-in-Chief.

"Three hundred physicians and surgeons, members of the State and County Committees of the Medical Section of the Council of National Defense, representing every State in the Union except one, met at the New Willard in Washington on Saturday and Sunday, May 4 and 5, called together by Dr. Franklin Martin, chairman of the General Medical Board of the Council of National Defense.

"Attention was focused on two important subjects: Increased enrollment in the Medical Reserve Corps of the Army and Navy; definite plans for the enrollment in the Volunteer Medical Service Corps of those physicians not available for active military service to meet the medical needs of the whole nation; and, in particular, to provide adequate medical service for our great war industries.

"Pleas for the immediate enrollment of 5,000 additional members of the Medical Reserve Corps of the Army, and 1,000 for the Naval Reserve Force, were made by Surgs. Gen. Gargas and Braisted. Members of the State and County Committees were urged to increase their activities as the authorized governmental agencies for the mobilization of the nation's medical resources.

MORNING SESSION.

"The meeting on Saturday morning was called to order by Dr. Franklin Martin, chairman of the General Medical Board, who called to the chair Maj. Edward Martin, of Philadelphia, chairman of the State Activities Committee.

"The Council oath of office was administered to members of the State committees, confirming them in their official capacity as the authorized representatives of the Council of National Defense.

"In his address of welcome Maj. F. F. SIMPSON, vice-chairman of the board, called attention to the fact that one year previous to the entry of this nation into the war, a national committee on medical preparedness was organized, and under its direction the State and County Committees were called into service, these State and County Committees being taken over as a part of the Medical Section of the Council of National Defense upon the organization of that body.

"Surg. Gen. GORGAS spoke of the organization of the Medical Reserve Corps and its expansion during the war, until it now includes 20,000 members through the activities of the Medical Section of the Council of National Defense; expressed his appreciation for the great work already accomplished and in anticipation of its continued activities along the same lines, which would insure an ever-increasing supply of men for the Reserve Corps. He called attention to the immediate need for 5,000 additional men in the Reserve Corps and stated that he had just received a pressing call from Gen. Pershing, asking that 500 medical men be forwarded immediately to France. 'If the men will come in now,' said Gen. Gorgas, '500 will stand the chance of going to France at once, and as there will be numerous requests, nearly everyone can go to France. A few good men must always remain on this side. I am glad to express my gratitude for the assistance you are going to give us in the next two or three months.'

"Admiral BRAISTED urged the needs of the Medical Reserve Corps of the Navy. 'Needs not quite so large as the Army's, but just as necessary. What we need is a gradual, constant influx of splendid medical personnel to meet the needs of our service. The work seems greater than it did a year ago. More and more the work is expanding and growing into new fields. We shall need in this new year every bit of help we can get. This great Council of National Defense stands as the leading organization to help us in our work in the war.'

"Mr. W. S. GIFFORD, Director of the Council, referred to the legal authorization of the work of the Council, that 'it was to create a relation that would bring about in time of need the immediate concentration and utilization of the resources of the nation. We have considered that it included the medical resources of the nation as well as industrial and other resources. In Washington we would have a directing and guiding agency, but that the work must be done by the people of the country.'

"Mr. JULIUS ROSENWALD, member of the Advisory Commission, expressed his appreciation of the work of the medical men of the nation. 'I believe no people are making a greater sacrifice than the physicians of this country. They deserve, as I have said frequently, the appreciation of the public and the nation more than any other branch.'

"Col. CALDWELL, of the Surgeon General's Office, presented figures as to the number of medical men in active service in the various corps: Medical Corps, 843; Medical Reserve Corps, 16,552; Medical Corps, National Guard, 1,027; Medical Corps, National Army, 114. He congratulated the profession upon the fact that this 'aggregate of medical officers had been contributed to the Medical Department of the Army by purely voluntary effort. It is the desire of the Surgeon General of the Army, in so far as the medical profession will consent to, and will volunteer to do, to mobilize the medical personnel of the country for the purpose of our military uses. This will best be accomplished by all medical men who are able-bodied, who are professionally competent, and who can leave their civil activities without sacrificing the activities of the community, industry or corporation to come into the Reserve Corps voluntarily and accept commissions. If this were done, it would be a simple matter for the Surgeon General to officer properly the military medical forces with competent medical personnel. It would make the task of the Council of National Defense and the different Surgeons General very easy in taking care of the civil communities wherever they may be in need of competent professional assistance.

"'The Personnel Division of the Surgeon General's Office has arranged to have at convenient places—has about completed the arrangement in every State of the Union, including the Capital—examining boards for applicants for commissions in the Medical Reserve Corps. With this understanding and your efforts when you return home to your activities in the different States, the Surgeon General feels confident there will be no question as to the securing of 5,000 additional medical officers for the Reserve Corps in the next few months.'

"Medical Inspector MURPHY explained the need for a large increase in the Navy Medical Corps. 'At one time last year we found we had sufficient medical officers for our needs. At the present time, despite that forecast,we find that we need more, and it is hoped that you gentlemen of the State Committees of the Medical Section of the Council of National Defense will help us to obtain this additional medical personnel. We need a thousand, we calculate, for the coming year. It is hoped that we will obtain, with your assistance, at least 100 a month so as to be safe. I would like to extend to you again on my part, as the Surgeon General has already done for himself, our appreciation in the Medical Corps of your efforts in our behalf, and trust that the future will bring to us your kind assistance once more. At the present time there is a bill before Congress increasing the Navy, almost doubling it. We will require more men. All new ships built here and everywhere, that no one knows about, will need new men. From France we get the request in connection with the American Expeditionary Force from Gen. Pershing that more naval medical officers are needed.'

"Maj. JOHN D. McLEAN spoke on the work of the States Activities Committee, referring to the organization of the State Committees a year previous to the entry of this nation into the war and their inclusion in the Medical Section of the Council of National Defense upon its organization. He reported in detail the service rendered by the Committee to the Surgeons General of the Army, Navy, and Public Health, in securing detailed information as to men available for membership in the Medical Reserve Corps and the enrollment of 20,000 medical officers during the past year. Through this Committee, in coöperation with the State Committees, has been disseminated a vast amount of information relating to every aspect of the nation's medical activities; in coöperation with the Provost Marshal General's office it has prepared rules of procedure for the organization of Medical Advisory Boards, it has aided in the selection of Medical Aides for the governors of the several States, and formulated plans outlining the specific duties of such Medical Aides.

"This Committee formulated the plans and inaugurated the Volunteer Medical Service Corps as authorized by the Council of National Defense. For membership in the Corps such physicians are eligible as would be accepted in the Medical Reserve Corps of the Army were it not for physical disability, over age, essential public need, essential institutional need, or dependents. Women physicians are eligible. The object of the Corps is to establish an emergency medical organization to perform, when required, such civic and military duties as are not provided for. State governing boards consist of the members of the State Committees of the Medical Section of the Council of National Defense, and from this board in each State are selected five men who act as an executive committee to pass upon applications for membership. Upon their recommendation, applications are passed to the Central Governing Board in Washington. Each member of the Corps, during active membership, is entitled to wear the insignia of the Corps, as authorized by the Council of National Defense.

"The officers of the Corps are as follows: President, Dr. Edward P. Davis; Vice-President, Dr. Henry H. Sherk; Acting Secretary, Dr. John D. McLean. The Central Governing Board includes the above-named officers: Dr. Edward H. Bradford, Dr. Truman W. Brophy, Dr. Duncan Eve, Sr., Dr. William Duffield Robinson, Dr. George David Stewart, and ex-officio, Dr. Franklin Martin and Dr. F. F. Simpson.

"Dr. EDWARD P. DAVIS, of Philadelphia, spoke of the purpose of the Volunteer Medical Service Corps. 'Would it not be a source of inspiration, gratification, and pleasure if we were organized in the service of our Government, and if we had something to show for that organization? Those of you who are on Medical Advisory Boards for the selective-service enlistment have been doing splendid work which is typical of this class of men. Others of you are teachers in medical colleges. Others are holding positions in great city hospitals, where their absence would leave the hospital sadly crippled. There are many activities along the lines of executive, educational, and institutional work, and other things in which we can serve. You may be asked to go to a neighboring camp as consultant. During that work you will be coöperating actively with the Government, and you will have an insignia worn in your buttonhole, and this will identify you as an officer of the United States Government upon temporary active duty.'

"Dr. Harry M. Sherman, of San Francisco; Dr. H. H. Martin of Savannah; Dr. Charles E. Kahlke, of Chicago; Dr. J. A. Witherspoon, of Nashville; Dr. Rock Sleyster, of Waupun, Wis.; and Dr. George D. Stewart, of New York, told of the progress of the work of the State Committees of their several States.

"Dr. FRANKLIN MARTIN spoke feelingly of the situation in England and France and their great need of doctors, and of the work of the American surgeons in the war zone.

"'In those hospital clearing stations back of the lines, our men—men who were in this fight early and were over there first—the best men we have—are working two shifts from 12 to 12. Do they stop at the end of the shift? No, they work from 12 to 12 and then go on. They sleep three or four hours and then go on again. For a half mile outside of these hospitals, men are waiting to be operated upon. They send out the orderlies and tell them to bring in the worst. That is the job "over there."

"'Do you realize that the Government did better than it knew and that Congress probably did better than it knew when it passed the law establishing the Council of National Defense? When war came on, fortunately, we had a little part in that Council of National Defense. What was our first thing to do? To help the bureaus and departments to expand as rapidly as possible in preparing for the coming war, and when war came, to expand still further those departments.

" 'You had been working one year before war began, under Dr. Simpson and Dr. Mayo. You had worked so well that as soon as the Council of National Defense was organized—at its first meeting—I asked them to take over this organization as the Medical Section of the Council, and from that time it became a part of the Council of National Defense. The resolution was passed, and at that minute you became just as much Government officers as though you had been receiving a salary and had a definite appointment. Do not think that the President does not know everything of importance that happens at each meeting of the General Medical Board, and everything of importance that is announced from the activities of these committees. He is deeply interested, as I know from conversation with him. He knows the subject from the beginning in April, 1916—a year before the war began—until the day before yesterday, and he regrets exceedingly that he is not here this morning to say how much he appreciates what you have done for him. He wants you to know that you are the authorized organization to carry on this work in connection with the departments of the Government. I quote from a personal letter:

" ' "Thank you for telling me of the approaching meeting of the State Committees of the Medical Section, Council of National Defense. Will you not be kind enough to convey to them, when they convene, a message of sincere appreciation from me of their services as authorized governmental agencies to the Army, Navy, Public Health Service, and American Red Cross, and of the part they have played in the preparation for war? Will you not at the same time convey to them my warm personal greetings?"

" 'And from another letter:

" ' "The papers which you submitted to me show a very impressive and valuable activity on the part of the Committee on Medicine and Sanitation of the Council of National Defense, and I want to congratulate you and your associates on the committee for the vigorous activities you have shown in this important matter.

" ' "The Council of National Defense and the Advisory Commission were authorized by Congress for the clear purpose of bringing about exchanges of opinion on fundamental problems, and it seems wise to continue the excellent work done by the committee legally constituted for the purpose without attempting to replace or duplicate, if not to confuse, its counsel."

" 'In organizing these committees and the original committee that became the General Medical Board we have insisted upon only one thing, that any organization anywhere could suggest members to the General Medical Board, and if those members were approved by the General Medical Board they would be accepted as individuals and not as members of an outside organization, because as soon as they became members of the General Medical Board, and as soon as you became members of the State Committees of the Medical Section, you become Government officials.

" 'The one thing we have gotten you here for more than anything else is to change your attitude from that of complacency to that of the man who is at the front and has gotten up his wind for the fight. When you go back home, get the members of your committee together and do the work we want you to do as promptly as possible, and convey the results to us as promptly.'

AFTERNOON SESSION.

"Dr. Edward Martin, Chairman: 'The purpose of this meeting is to justify our existence At the meeting in Chicago last fall, attended so largely by you, there was probably more constructive work done than at any medical meeting in this country, and the plans there suggested have been going on steadily every day since. First, we wish to formulate a plan by which we may deliver to the Surgeon General of the Army 5,000 medical men before the first of July, and probably many more within the next year. To do that requires much wisdom, much time, and an absolutely concentrated effort on the part of everyone of us. The first 5,000 will be easy. The next 10,000 will be most difficult. But you men can do it. It is our feeling that the only way we can get men is man to man, from you to them. Your Central Committee met yesterday and laid out a tentative scheme upon which we want your constructive criticism and help. We feel that if we can get together on this matter we can give the Surgeon General the men he wants, and the tentative scheme is this: That each State Committee, with the help of the County Committees where this seems desirable, take their tabulated lists of the profession in their State and select from that list twice as many men as will be wanted in this first call, and notify each one of those men, preferably by personal interview by the Chairman, or by interview on the part of one of the County Committeemen, or if not that by letter, telling, in the first place, of the broad, general need, and, in the second place, of the immediate, pressing, and urgent need, and, in the third place, that he has been selected by the State Committee as the man to apply at once for a commission and subject himself to the orders of the Surgeon General. That seems a simple, comprehensive way, and seems perhaps applicable to this whole country. The problem is different in each State, and each State must settle it for itself.

" 'Suppose the man refuses. What is your next step? We will then ask you to send his name to the Committee's office in Washington.

He will then receive a direct appeal to enlist because you have said he should. Suppose he refuses. We have nothing more to say, but we believe that any man who after that refuses to go into the service will find hell a more comfortable place. So you have them. At the first no violence but the kindest treatment, but if needful I have the greatest confidence in the medical profession. We want no such man among us. It is needful that these men should receive certain definite information in regard to the requirements, the cost of equipment, salary, chance of advancement, and that has been formulated and will be sent to each one of you. We believe that every man between 21 and 31 should be in the service of the United States. If one of our profession has been taken in the selective service and put on the deferred list because of dependents, that is no impediment where enlistment in the Medical Reserve Corps is concerned. Nor has any man under 31 the right to be so prosperous that he can do much better by himself than the United States can do by him financially. We are after them. Our honor is involved. Our duty is to get them, and you will do it.'

"Thereafter followed a lively discussion of the numerous problems arising out of the work of the State and County Committees. The difficulties that have arisen in certain States with regard to the examination of applicants for the Medical Reserve Corps will be solved by a new plan of the Surgeons General for increasing the number of medical examiners and stationing them at a larger number of convenient points in each State, as explained by Col. Caldwell. The complete details of this plan, including the location and personnel of the examining boards, will be forwarded to the State Committees.

"It was explained that under the present law the examination of applicants for the Medical Reserve Corps must be made by commissioned officers of the Medical Corps or Medical Reserve Corps. Suggestions that members of the Volunteer Medical Service Corps might be authorized to conduct such examinations, thereby relieving men for active service, brought forth a lively discussion and will be considered by the Committee.

"Methods pursued in various States to secure complete data as to available men for active service were explained and discussed, as well as methods adopted to secure enrollment. Publicity in the newspapers was suggested as a most effective means. The quota of men desired from each County having been determined by the State Committee, the figures should be published in comparison with the medical population. These facts having been brought to the attention of each community, public opinion will supply the needed influence.

"In answer to many questions concerning service in the Medical Reserve Corps, such as rank, pay, special work, etc., the State Activities Committee has had printed a 'List of Questions and Answers' which is to be distributed through the State and County Committees. Copies of the pamphlet on War Risk Insurance, as issued by the Treasury Department, may be had on application to the Committee's office in Washington.

"In reply to many questions as to the status of a physician under 31 years of age who had not received a commission in the Medical Reserve Corps because of physical disability and afterwards drawn into military service by the local advisory boards, it was pointed out that where such a physician had been sent into a camp and accepted by the surgeon in charge and enlisted as a soldier, he should notify his superior medical officer that he has applied for a commission in the Medical Reserve Corps. He will then be reëxamined and the Surgeon General will give him a commission even if rejected by the medical examiner, except that he might be rejected on moral grounds. Col. Caldwell, of the Surgeon General's Office, stated that 'In every instance where a man has been actually enlisted in the army as a private the Surgeon General will commission him in the Medical Reserve Corps.'

"Senator OWEN of Oklahoma was introduced. 'It gives me a peculiar pleasure to have the opportunity of paying my respects to you and to your great profession. Nearly all of my people are surgeons and I have always taken a very lively interest in the profession.'

"'In the matter of preserving the lives of the young men we have drawn from the American homes and have sent to defend liberty and righteousness and humanity on the battle fields of Europe, I think it would be impossible for us to take too good care of them. For that reason I have particularly interested myself in having the organization of the Medical Department of the Army and the Medical Reserve Corps given the dignity and rank and position which will enable them to render the service which is required at their hands. In appearing before the subcommittee a day or two ago presenting the argument, I called attention to the fact that the organization of the Medical Department of the Army had by statute one brigadier general, who, during the life of Gen. Gorgas, should be a major general, but when he passes from this terrestrial sphere of usefulness, it will be as a brigadier general if the law stands. Under that organization in this war, under our present quota of troops, under Gen. Gorgas will be 20,000 officers, 50,000 nurses, over 200,000 enlisted men, probably 500,000 beds, allowing one bed to every four soldiers as the peak load, as we must be prepared for the maximum and not the minimum. We can not average the casualties of battle, but this great force, under the present organization of the Medical Department of the Army, omitting what the General Staff might be good enough to recommend to the President of the

United States in regard to the Reserve Corps, is one general officer. I presented to the committee the organizations of the medical departments of the French Army, the British Army, the Japanese Army, and of all of the armies of the civilized nations of the world, but those three nations I refer to now have in general officers in the medical organization of those armies an average of more than twice as many as I have sought to obtain in the organization of our own Army. Some men are thoughtless enough to think that in asking for these general officers it is a contest of individuals for rank. It is not a contest of individuals for rank. I do not regard the rank of major general as conferring any additional dignity upon Crile or Mayo. The value of these dignities is to enable the men charged with gigantic responsibilities and preservation of men the ability to discharge their functions better.

" 'I called the attention of the committee to the fact that one civilized nation after another had found it necessary in organizing the medical departments of their armies to give more than twice as many general officers as is sought for in this bill now desired for the better organization of our Medical Department. Will you forget, and will the country forget what occurred at Chickamauga under that dear old general officer, Brooke, the good old American soldier, but who had about as much knowledge of typhoid fever as a Kamchatkan has of the internal constitution of the ecumenical council? You may remember that one-quarter of his entire command had typhoid fever, that nearly a thousand picked, healthy, strong, fresh young men died of typhoid fever in that camp. Why? Because the medical officer in charge had no rank; because the line officer in charge disregarded the earnest, repeated recommendations of the medical officers who were without rank. That is why, and the young men died like flies. The medical officers made the right recommendations, but the officers of the line could plead as an extenuating circumstance that they were entirely ignorant of what would happen if they disregarded these orders. The line officer is left responsible for the health, without any moral or ethical responsibility, and can not be punished under the organization. If a line officer could be held before a military court-martial when men died under his command, it would be a far better method of organization.

" 'I want to say to you briefly that I believe now that the committees of Congress have at last understood that this desired organization of the Medical Department of the Army was for the sole patriotic purpose of saving the lives of the American soldiers, and the responsibility is now on the members of that committee, and on the Senate and House. I believe they will discharge their responsibilities wisely and well, if you give them proper attention.' "

The Owen-Dyer Bill was described and discussed at length in the issue of the Journal for May 9.

In the evening, a dinner was given at the Army and Navy Club to the General Medical Board and the members of the State and County Committees. Dr. Franklin Martin was toastmaster, and Dr. Edward P. Davis, of Philadelphia, the principal speaker. Addresses were also made by General Gorgas, Admiral Braisted, Col. Frank Billings, Majors F. F. Simpson, W. D. Haggard, and W. W. Keene.

A later report from Washington on May 12 describes the initial steps since taken for the organization of the Volunteer Medical Service Corps, by the sending out to all physicians ineligible for camp or field duty a circular letter in part as follows:

" 'The Council of National Defense has authorized and directed the medical section of the Council to organize the physicians of the country who are ineligible for membership in the Medical Reserve Corps on account of physical disability, over age (55), civic or institutions needs, into the Volunteer Medical Service Corps. The members of this corps will be classified according to their ability to serve and will render aid to existing governmental agencies upon request of the Army, Navy, Public Health Service and Red Cross or the Council of National Defense.

" 'It is hoped that every physician who, for any one of the reasons enumerated above, is unable to enroll in the Medical Reserve Corps will join the Volunteer Medical Service Corps.

"The blank provides for details as to reason for ineligibility to the Medical Reserve Corps, as to educational and professional experience and other details. The fact is also recognized that rejected applicants for service in the Medical Reserve Corps may overcome the physical defects that led to rejection, and may, therefore, become eligible.

"The procedure for joining is simple. The applicant returns his filled blank to the central governing board in Washington, and it is then referred to the proper state executive committee for its recommendations as to the qualifications of the applicant, and as to the kind of work for which he seems most fitted."

Correspondence.

ADDRESS BEFORE THE GOVERNOR OF NEW YORK AT THE HEARING ON THE BILL FOR A NARCOTIC DRUG COMMISSIONER, BY JOHN P. DAVIN, M.D., REPRESENTING THE FEDERATION OF MEDICAL ECONOMIC LEAGUES, THE AMERICAN MEDICAL SOCIETY FOR THE

STUDY OF ALCOHOL AND OTHER NARCOTICS, THE ASSOCIATION FOR MEDICAL DEFENSE, BRONX COUNTY MEDICAL SOCIETY.

Mr. Editor:—

We object to this law because it destroys the obligation of professional secrecy between patient and physician, in common with that of counsel and priest. It limits the discretion of administering opium beyond what is considered a reasonable quantity by a lay commissioner, or of dispensing more than two grains of morphine except under regulations irksome, if not impossible, of observance.

It permits the possibility of a revocation of the license granted by the State to the physician for an offense committed by him which, if committed by a lay peddler of drugs is punishable only as a misdemeanor. It permits the commissioner to make rules and regulations under a complicated system impossible of observance by the physician in active practice, which shall have all the force and effect of statute until modified or rescinded.

It permits the commitment, on application to a magistrate, of anyone using opium, not under the direct care of a physician. There are many such persons, normal in other respects, who have to use opium. They could be proceeded against by interested parties from motives of a questionable character. It would make the plea of drug addiction an excuse for those accused of crime, as under this plea they would obtain privileges of treatment which act as a stay of proceedings pending the trial of their cases.

There was no reason for including cocaine in this law. The present cocaine law makes the illegal sale of this drug a felony. It has worked well as it was drawn up by physicians, druggists and manufacturers, without the interference of the criminal authorities. This penalty is now reduced to a misdemeanor in common with the unlawful sale of opium.

We object because, according to the published statement of an assistant district attorney of New York City, this bill is the work of the New York State Magistrates and the New York Committee on the Drug Evil, the bench, the bar and the prosecuting attorney of New York City. According to the same authority, it was pronounced by a late member of the narcotic squad of the Police Department "a measure that was destined to establish the most perfect system for the control of narcotics that could be conceived."

I might also state that the *Medical World* is included in this category. Speaking as one of those who appeared before the commission as a medical witness, I beg to be excused from any responsibility for this measure, which those I represent heartily and emphatically denounce as revolutionary, unconstitutional, and inimical to the welfare of those to whom we minister in the discharge of our obligation as physicians.

John P. Davin, M.D.

In connection with the above communication may be quoted also the following letter from Dr. Davin in a recent issue of the *New York Evening Sun:*

"If the public realized fully what is meant by the bill for a 'Commissioner of Drugs,' now before the Governor of this State for approval, there would be a storm of protest from the people as well as from the entire medical profession of New York.

"The bill practically puts the practice of medicine under the control of a lay comissioner of drugs. This is accomplished by the clause compelling a registration of physicians in order to prescribe opium and its derivatives, without the use of which no physician would be competent to treat disease in its commonest form. To the public it means the registration also of their names when the dispensing of what is deemed a reasonable amount of morphine is exceeded in the judgment of a lay official whose rulings of opinion have the effect of State law.

"For the first time the druggists have ceased to oppose the making of laws by the criminal authorities regulating the practice of their profession. This has been accomplished, as was shown at the hearing before the Governor, by the harassment of the police, to which they have been subjected and which they hope to escape under a Commissioner of Drugs.

"Under this dispensation they also hope to escape from the burden of the extortionate prices which they have been compelled to charge for the commonest prescription to compensate for the risk and the technicalities imposed upon them in compounding legitimate prescriptions.

"Senator Whitney, whose commission brought in this bill, is a druggist himself. He is the authority for the statement that many country druggists refuse to carry morphine in their stock, owing to the unescapable danger of dispensing it. Needless to say, this failure to live up to the responsibilities of their profession makes possible not only needless suffering but loss of life itself, in sparsely settled communities.

"John P. Davin, M.D.

"New York, April 29."

SURGICAL SYPHILIS IN THE EIGHTIES.

Mr. Editor—

The following paragraphs are from Dr. A. P. Gerster's interesting book, recently published, entitled, "Recollections of a New York Surgeon."

"With all the talent and learning possessed by the men of the Surgical Society of the eighties, one peculiarity was singular in some of them, not excepting the genito-urinary surgeons. This was their scant acquaintance with the protean forms of inveterate lues—forms which to this day are wont to masquerade among the uninformed as surgical cases. Amputations done on account of gummata mistaken for neoplasms were not very rare. One cause of this was the prevalence of curiously prudish notions regarding the practitioner's ethical attitude towards the 'shameful disease.' . . . The Wassermann test has done away with all this—since it has shown the malady lurking in some of our bluest blood, the taboo was graciously lifted."

Very truly yours,
Wm. Pearce Coues.

31 Massachusetts Avenue,
May 17th, 1918.

NOTICE.

MEDICAL BOOKS AND RECENT PERIODICALS WANTED FOR THE LIBRARY OF THE BASE HOSPITAL AT CAMP DEVENS.

Major Elliott P. Joslin requests the gift of standard Medical Books and Journals, not earlier than 1915. He asks that these be sent to the Boston Medical Library, which will act as a Depository, where the material will be arranged and held until it can be forwarded to Camp Devens.

John W. Farlow, Librarian.

SOCIETY NOTICE.

The Norfolk District Medical Society.—A special meeting of the Society will be held at the home of Dr. Libby, 1990 Columbus Avenue, Tuesday, May 28, at 5 p.m. Business: Election of a councilor.

Bradford Kent, M.D., *Secretary.*

RECENT DEATHS.

Dr. O. M. Brown, a medical practitioner of Everett, died recently at the age of 64 years, at his home, in that town.

The Boston Medical and Surgical Journal

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Original Articles.

CONGENITAL PYLORIC STENOSIS.*

BY W. E. LADD, M.D., F.A.C.S., BOSTON.

THE literature on pyloric stenosis was very scarce until about 1900, since which time it has been becoming steadily more voluminous, and during the last five years has increased most rapidly, which may be taken as an indication of not only increased knowledge of the condition but also of greater success in its alleviation.

During the last three years at the Children's Hospital, we have substituted the operation of pylorotomy for the more formidable and complex operation of gastro-enterostomy previously used for the relief of this condition. This has caused a marked improvement in the results and a more clearly defined knowledge of cases suitable for operation.

It is for the purpose of explaining our present beliefs and stating our results that this paper is written. The finding by Dent and others of a pyloric tumor in the fetus gives pretty conclusive proof of the condition being one of congenital origin, though the fact that the symptoms do not usually manifest themselves before two weeks, has thrown some doubt on this question. The slight amount of elasticity of the scirrhus-like tumor found at operation, and a small amount of swelling of the mucous membrane necessary to plug the rigid opening from the stomach, seem to me to explain adequately the late appearance of the symptoms and to interfere in no way with the belief that the cause of stenosis is congenital in origin.

In our cases the symptoms have commenced in the majority of cases between the second and third weeks, a few later, but none earlier than the tenth day. The typical clinical picture is of a breast-fed baby who has done well for the first two or three weeks and then, without apparent reason, commences vomiting. The vomiting is expulsive and forcible in character and occurs frequently immediately after or even during nursing. Following the onset of vomiting, loss of weight, infrequent and small stools are noticed. In the severe cases the loss of weight may be quite rapid (I operated on a baby recently who lost five ounces in a day, and twelve ounces in the six days before the operation). On examination, one finds an ill-nourished baby with prominent epigastrium, where peristaltic waves can be seen, and under the edge of the liver in many cases may be felt a tumor the size of an olive. Such is the typical picture of a case of pyloric stenosis, and on such a picture one would probably be justified in making a diagnosis. But one does not always find all the features of this picture clearly defined, so it is worth while considering how little one is justified in making the diagnosis on, and especially how little one is justified in considering cause for operation.

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* Read at meeting of New England Pediatric Society, March 8, 1918.

Let us consider the question of tumor first. There are some men who consider that they can feel the tumor in almost every case, and who consider it pathognomonic when they do. On account of the deep and high situation of the pylorus under the edge of the liver, I believe that there are many cases in which it is impossible for anyone to feel the tumor. Furthermore, even when one does, it does not mean that one is necessarily dealing with a true case of stenosis. A few weeks ago I operated on a case in which the tumor was easily palpable, and at operation a tumor at the pylorus was found, but it was not of the hard, unresisting character of the true stenosis, and, on cutting the muscle, it was found to be comparatively thin and bled easily. The tumor was largely composed of redundant mucous membrane. Any operation so far devised is not beneficial in such cases, in our experience.

Visible peristalsis, when running from left to right across the epigastrium, in large waves, I believe to be very suggestive and important in making the diagnosis. But of all the features of the picture, the story, when attainable, is so characteristic that it seems to me of the greatest importance. There are some cases which, even after all the evidence available is at hand, will still leave one in doubt as to the diagnosis, or at least as to the advisability of operation. For such cases I believe the bismuth meal and x-ray to be a great aid, and have never seen any bad results from its use. From a surgical point of view, an essential fact to ascertain is whether there is obstruction or not, and the x-ray is certainly a great aid in establishing this point. Holt advises against the use of the x-ray, and bases his objection partly on one case in which a series of observations was made over a period of twenty-four hours, at the end of which time the surgeon was called, but the baby was dead before he arrived. Holt's objection, I believe, should be directed against the method of using the x-ray rather than against its use entirely. One plate may be taken immediately after the ingestion of the meal, to show the size and shape of the stomach, and one or two more, two, three, or four hours later. Such procedure has given us very useful data, and seems to me more accurate and less trying on the baby than attempting to ascertain gastric retention by means of a suction tube, as recommended by Holt.

Now, having made the diagnosis, what is to be the treatment? In the severe cases where vomiting is persistent and little or no food passes from the stomach, there can be but one outcome of any treatment other than surgical. That is rapid wasting and death, which may be expected in the course of about a month or even less time after the onset of symptoms. In what Holt classifies as the milder cases, which I am not sure should be classified as stenosis at all, recovery may be expected with medical treatment and careful feeding under the direction of a good pediatrician. The question of classification may be a quibble on terms, but the appearance of the tumor found at operation is so definite that I am tempted to quibble a bit. In the severe types, the pylorus is hard, inelastic and, when cut, hardly bleeds at all, the cut surface being white and appearing almost like cartilage. On spreading the incision, the mucous membrane frees readily from the muscular layer and pouts up into the wound, giving the stomach a good outlet. In this type of case the results from the muscle-splitting operation are most gratifying. In the milder type, so called, which I had classified in my own mind as pylorospasm, one finds a tumor sometimes as large as in the true stenosis, but soft, elastic, and bleeding freely when cut, and the muscular and mucous layers not separating easily. My experience with this type, though limited, leads me to believe that they should not be operated on at all, and certainly not by the muscle-splitting operation.

The indications for operation, then, are: the typical story, the physical findings, loss of weight and failure to improve under medical treatment. The medical treatment should not be persisted in until the baby becomes a poor surgical risk. In doubtful cases the x-ray will often settle the question.

When operation has been decided upon, what operation shall be performed? Up to five years ago gastro-enterostomy was the operation selected by most surgeons, though divulsion of the pylorus and various plastic operations had their advocates. During the last three or four years the simpler operation of making a longitudinal incision through the muscular coats of the pylorus and spreading the incision so as to allow the mucous membrane to bulge into the wound has been used quite extensively. In performing this operation, which we have called pylorotomy, certain precautions must be taken. The muscle fibers must be thoroughly separated from the stomach to the duodenum, otherwise a constriction will be left. The cut must be widely separated and the mucous membrane allowed to come up to the level of the serous surface to avoid the muscle falling together again. At the duodenal end of the incision care must be taken to avoid perforating the mucous membrane, which is thin at this point. Bearing these points in mind, the operation can be performed in ten minutes or less and with very little handling of the viscera and slight shock.

Now what are the results of the three kinds of treatment,—medical, gastro-enterostomy and pylorotomy? Holt gives some statistics on this subject, arranged chronologically, which are instructive and which I shall quote:

RESULTS OF MEDICAL TREATMENT AND THE OLDER AND MORE RECENT SURGICAL TREATMENT.*

	CASES No.	RECOVERED No.	DIED No.	MORTALITY PER CENT.	AV. AGE WKS.	AV. WT. LBS.
First Period, 1901-1911:						
Without operation	24	10	14	58	..	..
Operation (Gastro-enterostomy)	17	7	10	58	..	..
Total	41	17	24	58	7.3	7.6
Second Period, 1912-1914:						
Without operation	7	3	4	57	..	..
Operation (Gastro-enterostomy, 24; Rammstedt, 6)	30	17	13	43	..	..
Total	37	20	17	45.9	6.6	7.7
Third Period, 1915-1916:						
Without operation	2	1	1	50	..	..
Operation (Rammstedt)	61	47	14	23	..	..
Total	63	48	15	23.8	7.0	6.8

* In the first period, operation was performed generally after medical treatment; in the second period, usually soon after admission, and in the third period, always soon after admission. The average duration of symptoms on admission in each group was 4.2 weeks.

From this table one notices that the mortality for medical treatment remains over 50%, while the mortality from surgical treatment has progressively diminished.

RAMMSTEDT'S OPERATION AT BABIES' HOSPITAL.*

	CASES, No.	DEATHS, No.	MORTALITY, PER CENT.
Prior to 1915	6	2	33
1915	35	10	28.5
1916	26	4	15.3
	67	16	24

For the year 1916 he reports 26 pylorotomies with four deaths, a mortality of 15.3%. The mortality from gastro-enterostomy in the series of Holt and Downes is perhaps a little high. One finds in the literature reports of small series of cases, notably those of Richter, Stillman, and others, with considerably lower mortality following gastro-enterostomy. And there will unquestionably be from time to time men who happen to have cases in unusually good condition who can report good results from this operation. However, there is no question in my mind but that the simpler operation is the operation of choice for most surgeons. It entails much less shock, restores normal conditions instead of a substitute, and allows feeding to be begun much sooner, which I believe to be highly important, especially in the dried-up, emaciated patients.

In January, 1915, at the Children's Hospital, I performed the first pylorotomy we had done there. The result was very satisfactory and led us to adopt this operation in preference to all others. Since that time, there have been 23 operations done there by the various members of the staff, to which I have added three cases from my outside work, making a total of 26. Of these, 22 have recovered and four died, a mortality of 15.3%. Of the four fatal cases two were very bad risks and died within 36 hours from the time of operation. One other patient did very well for five days, took the feedings well, had no vomiting, bowels moved freely, and in every way seemed to be on the road to recovery, when he began to have slow and shallow respiration, feeble pulse, and at the end of a few hours was dead. What the cause of death was in this case I have no idea as we had no post-mortem. The fourth case was one which I think would have probably done better without operation. The baby was three months old and had had a variety of feeding, and though it had very forcible and frequent vomiting, I do not think was a true case of stenosis. The baby was in poor condition at time of operation, went on vomiting just the same after the operation as it had before, and died after a few days. I think probably had this baby been x-rayed, no operation would have been performed.

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* Three patients died from gastro-intestinal conditions subsequently (4 weeks, 6 weeks, 7 weeks); one patient died from empyema (3 months) and one from pneumonia (4 months); forty-six have been followed and are well to date.

To sum up, then, the results of our experience: Since adopting the muscle-splitting operation, we have a more definite picture of the characteristics of the pyloric tumor, which we believe to be congenital in origin.

When the obstruction is nearly complete, we recommend operation without delay, and believe that two of our four deaths might have been so avoided.

In doubtful cases we consider the x-ray valuable in deciding the advisability of operation, and have seen no bad results from its use. Our mortality is much lower following the operation of pylorotomy than after gastro-enterostomy. For that and other reasons we consider pylorotomy the operation of choice.

By operating with less delay on the cases that should be operated on, and not operating at all on the cases that should not be operated on, we hope in the future that our results will be even more gratifying than they have been during the last three years.

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A CLINICAL STUDY OF 150 CASES OF BRONCHIAL ASTHMA.[*]

By Francis M. Rackemann, M.D., Boston,

Alumni Assistant in Medicine, Harvard Medical School; Assistant in Medicine, Massachusetts General Hospital.

One hundred and fifty cases of asthma have been studied in the Out-Patient Department and wards of the Massachusetts General Hospital and in private practice.

The recent theories as to the relation of asthma to anaphylaxis, as well as the considerable experimental and clinical study which has been made in all parts of the country on this relation, have been held constantly in mind, and the present work has been approached from this point of view.

The object of study was threefold:

1. To discover the cause of asthma or to identify the offending foreign protein in each patient.
2. To separate the patients having the same cause of asthma into groups and,
3. To see whether there was one or more symptom or sign present in each patient and not present in normal non-asthmatic individuals which might indicate a fundamental disturbance of anatomy or physiology in these patients as a group.

Each patient was studied by taking a very careful history, by making a complete physical examination, including chest x-rays, special examination of the nose and throat by experts, electrocardiogram, and blood smears when necessary.

In addition, "skin tests" were made in a large proportion of the patients. Water-clear, sterile solutions of various protein substances were diluted so that each contained the same quantity of total nitrogen per cubic centimeter. These solutions were then injected intradermally. In normal non-asthmatic inidviduals and in certain asthmatics, there was no result showing that the solutions were not irritating. Certain asthmatics gave positive tests. These consisted of a typical urticarial wheal surrounded by a zone of bright erythema, which appeared within ten minutes and was evident for perhaps forty-five minutes or even longer.

Different proteins were used according to the indication in the individuals tested. The solutions available included the sera of all domestic animals—the dander of the horse, cat and dog, the pollen of ragweed, orchard grass, goldenrod, clover and red top hay, egg albumin, a protein from fish muscle, and wheat gliadin.

From the history and skin tests, it has been possible to group 80% of the patients. Two major divisions were recognized, according as to whether the foreign protein apparently responsible came from outside the body (extrinsic), or whether the foreign protein was theoretically absorbed from some focus within the body (intrinsic).

Twenty-eight per cent. of the cases had extrinsic asthma, while almost twice the number, or 53%, had intrinsic asthma.

Each of these divisions can be divided into subgroups as follows:

EXTRINSIC ASTHMA.

Pollen Asthma. Twenty-four cases gave a definite history of aggravation of asthma during the summer months, and all but five gave a positive skin test to extracts of one or more pollens. The susceptibility to pollen is a highly specific one, because in several histories the onset date of asthma is exactly coincident with the onset date of cases of uncomplicated hay-fever, and in about half of all these cases the asthma ceases abruptly with the first frost.

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[*] Abstract of paper read before the Norfolk South District Medical Society.

On these accounts, it is assumed that pollen proteins are the cause of asthma in 12 patients, but the other 12 are complicated in that, although they give positive skin tests to pollens, they have asthma at other seasons of the year when there is no pollen in the air.

Horse Asthma. Sixteen cases gave a positive skin test to horse dander protein and gave histories at least compatible with and often too obvious of susceptibility to horses.

Twenty-one other patients gave a positive skin test to horse dander protein, but are not classed as horse asthmatics because there is absolutely nothing in their history or in their daily life which made it seem reasonable or even possible that horse dust or horse "emanation" might cause their asthma. The positive skin test is unexplained.

Food Asthma. Only two cases in this particular series gave a history of violent susceptibility to food,—one, a child, was susceptible to eggs; the other, a man of 25, had been always susceptible to fish but was in every way normal so long as he avoided eating or handling this food or licking the fish glue on postage stamps.

INTRINSIC ASTHMA.

Gastro-Intestinal. In five cases, derangements of the gastro-intestinal tract seemed to be a possible cause. A peptic ulcer demonstrated by x-rays, indigestion and constipation were the associated conditions, treatment of which helped the asthma markedly.

Bronchitis. This heading is given because the attacks of asthma in these 24 cases came on after a "cold" and recurred only at relatively long intervals and at times which were not associated with exposure to pollens, to danders, to special foods, or other foreign proteins.

"Winter Asthma" and Chronic Bronchitis are included in 30 cases of emphysema. The two groups are differentiated because, while the cases of "winter asthma" have symptoms only in cold weather, the others have asthma practically continuously.

Tuberculosis was found in 6 cases. In 4 of these the onset of asthma appeared to be coincident with the onset of the tuberculosis, and a causal relationship was therefore considered probable.

Nose and Teeth. In spite of the very favorable reports in the literature on the result of treating bronchial asthma by operating on the nose and teeth, only 4 cases in this report seemed worthy to be grouped here.

Miscellaneous. The 10 cases include the association of asthma with pregnancy (2), with catamenia (2), with enlarged bronchial lymph nodes (3), with lordosis (1), with obscure circulatory disturbances (2).

A general survey of the cases reveals several very interesting observations. The cases of extrinsic asthma vary very widely from the cases of intrinsic asthma in several ways. First, they are only a little more than half as numerous; second, the age at onset averages only 12 years instead of 26 years; and, lastly,—which is a very remarkable and important point,—cases of extrinsic asthma have a family history of either asthma, hay-fever, or food poisoning (strawberries, etc.) in 58.7%, while the cases of intrinsic asthma have such a family history in only 10.5%.

Although it has been thought for a long time that asthma was simply an expression of some disturbance of the nervous or autonomic system, there is abundant evidence to show that there are other reasonable explanations in most of the cases. It is possible to produce an attack of asthma in many cases of the extrinsic group by an artificial injection of the foreign protein in question, and to do this without warning of any kind—a fact which is of the greatest significance.

Careful study has so far failed to reveal any abnormal anatomy or physiology in these patients. One hundred and eighty-four differential blood smears done in 123 cases have shown a relatively constant eosinophilia averaging about 5%, but there has appeared no significant difference between the eosinophilia in cases of extrinsic from that in cases of intrinsic asthma, nor any significant difference in the counts made during and between the asthmatic attacks in either divisions.

Attention is called to the fact that asthma has been recorded as a symptom of vagotonia—the conditions resulting from a heightened tonus in the cranio-sacral autonomic system. The resulting relief from the attack following epinephrin injections is important evidence of this.

Further study in this direction will, it is hoped, solve the question of not only why certain people have a natural sensitiveness to foreign proteins, but also why this sensitiveness should result in asthma.

Treatment of asthma resolves itself into the treatment of the exciting cause in the individual patient.

When the history or the patient's experience is compatible with the skin tests as showing susceptibility to some foreign protein, repeated parenteral injections of that foreign protein will usually have a marked beneficial effect and may cure. Avoidance of the offending protein, if possible, is the simplest remedy. Cases of intrinsic asthma can be treated by mechanically removing the cause, but this does not often effect a permanent cure.

Emphysema cases do remarkably well on expectorants—especially potassium iodide. Repeated injections of the patient's own blood, removed and defibrinated, has temporarily relieved 2 patients, but has failed in 5 others.

Autogenous vaccines of organisms in the patient's sputum sometimes relieve temporarily.

Frequently unsuspected and apparently unimportant suggestions, such as a temporary change of residence, a slight temporary modification of the diet, small doses of calcium lactate, ether anesthesia, temporary rest in bed with full diet, correction of faulty position, have been of the greatest assistance, and not infrequently have led to a virtual cure.

One great difficulty is that in all these various methods there is rarely any good control because so many patients have intervals of freedom from attacks—which intervals have lasted for several years.

THE CONTROL OF COMMUNICABLE DISEASES.

By D. M. Lewis, M.D., New Haven, Conn.

There are two very significant facts relating to the public health that are dominant at the present time. The first is that we are in an era seeking the prevention of cases of such diseases. Secondly, we are placing diseases never previously recognized as "contagious," such as poliomyelitis and pneumonia, under the same restrictions for prevention as are applied and have been applied for previously accepted contagious diseases. Inasmuch as it is generally conceded that first, such restrictions have not influenced continued reduction of such contagious diseases, and because after we have been through an epidemic of one, poliomyelitis, for example, it is the consensus of opinion that there was lack of any proof of the case giving rise to another case (the convalescent case alone excepted, which should be borne in mind in connection with this discussion), it would seem timely to ask if we have to travel along the same old lines as laid down for the so-called contagious diseases, rather than to start at rock bottom. With case reports is there then possible a system which will prevent, as has not been possible previously? Is there then also a basis for prevention before case reports? That there is has been demonstrated by me by the results of the past four years compared to previous years and compared to other neighboring cities. The criterion of absence of return cases, infrequent secondary cases, and a most marked decrease of neighborhood secondary cases is fairly such a criterion. In that the results have been reached first by a demonstration that secondary and return cases are, like secondary neighborhood cases, measured not by a consideration of isolation of contacts who have been infected by the case, but by isolating the carrier who was among the contacts, any logical preventive system revolves around the carrier. To that end all present-day codes are of little practical value other than such regulations as have always been in force for the reporting of cases when the carrier is in the family quarantined. Based on my observations for the first two years, I drew up and have had in operation for one year the following code which is standard for the first five sections. The remaining sections are original and as elastic as are the varied phases of any one infection among every class of individual ill or attendant treating the case. I believe that it is adaptable for results in any and all infectious diseases having, as a base, sensible reason and observation rather than the usual present-day generally fast rule of time limits. The code is as follows:

ORDINANCE DE COMMUNICABLE DISEASES.

Be it ordained by the Board of Aldermen of the City of New Haven:

Section 869. It shall be, and is hereby made the duty of the Board of Health to keep currently informed of the communicable diseases throughout the City, and to prevent the spread of these diseases.

Section 870. The following named diseases are hereby declared to be dangerous to the public health and made notifiable, and the occurrence of cases shall be reported as herein provided:

Group I—Communicable Diseases.

Asiatic cholera.
Diphtheria.
Dysentery,
  (*a*) Amebic.
  (*b*) Bacillary.
Favus.
German measles.
Glanders.
Measles.
Meningitis,
  (*a*) Epidemic cerebrospinal.
Mumps.
Ophthalmia neonatorum.
Paratyphoid fever.
Poliomyelitis (acute infectious).
Scarlet fever.
Septic sore throat.
Smallpox.
Tuberculosis (all forms, the organ or part affected in each case to be specified).
Typhoid fever.
Typhus fever.
Whooping cough.
Yellow fever.

And venereal diseases as now or may hereafter be provided by the general statutes of the State of Connecticut.

Provided, that the Board of Health may, from time to time, or for any period of time, in its discretion declare additional or unusual diseases notifiable and subject to the provisions of this Act.

Section 871. Every person who treats or examines, for the purpose of diagnosis or treatment, any person suffering or afflicted with any one of the diseases made notifiable by the preceding section, shall report such case to the Department of Health within twelve hours after making a diagnosis that the disease is one that is required to be reported. Said report shall be transmitted either by telephone or in writing and shall give the following information:

1. The date when the report is made.
2. The name of the disease.
3. The time of onset or the duration of the disease.
4. The name and address of the patient.
5. Age, occupation, school attended, or place of employment of the patient.
6. Number of adults and of children in the household.
7. Name and address of the person making the report.

Section 872. Every teacher and every person in charge of any public or private school, including Sunday schools, shall report immediately to the Department of Health each and every case which he or she knows or suspects to be a case of a notifiable disease in persons attending or employed in his or her school.

Section 873. Every hospital, asylum, or other public or private institution for the treatment of the sick shall be provided, for display in its office, with a card upon which Sections 2, 3, and 4, of this Act shall have been printed in type not smaller than ten point. These cards shall not be less than 12 x 14 inches.

Section 874. It shall be the duty of said Department of Health, through its accredited agents, to maintain such adequate quarantine or isolation of those sick of, and those proven carriers of notifiable diseases as shall be sufficient for the protection of public health. Provided that, in suspected cases of communicable diseases, or in suspected carriers of such diseases, reasonable quarantine or isolation may be required of any individual or individuals or their premises.

Section 875. Said quarantine or isolation shall be officially made, by such reasonable rules and notices posted on, or in the premises, or otherwise published, as may be deemed necessary by the Department of Health to control danger to the public health from each notifiable disease.

Until said quarantine or isolation shall be officially made, no individual other than a wage-earner shall be removed from the premises until permission shall be given by the Department of Health, through its proper agents.

The termination, by recovery or otherwise, of all cases of notifiable diseases shall be reported by the physician, nurse, or other person in charge of the case to said Department of Health. No case of, or carrier of, such diseases shall be officially released from quarantine or isolation save under the direction of the agents of said department. Provided that in any quarantine or isolation hospital the physician in charge may so release those sick, under the rules and regulations of the Department of Health, upon notification of the termination of the case to said department.

The requirements of the preceding section shall be applicable to physicians attending patients ill with any of the notifiable diseases in hospitals, asylums, or institutions, public or private; or when no physician is in attendance, by the nurse, midwife, father, mother, or other person in charge of the patient, each in the order named.

Section 876. Restrictions made on individuals in their relations to the public health shall be officially made and recorded by said Department of Health; likewise the termination of such restrictions. Provided that, during quarantine or isolation of any case, or of any carrier of a notifiable disease, either diagnosis may be reversed or said quarantine or isolation may be changed from that of the premises of the one sick to that of any proper quarantine or isolation institution, when conditions under the former state become such as to be a danger to public health.

Section 877. It shall be the duty of said Department of Health, through its accredited agents, to demand at all times proper disinfection or destruction of all infectious material during the course of and at the termination of any notifiable disease. The relation of such infectious material, and the paths by which it may be transmitted, directly or indirectly, to other individuals through the medium of domestic animals, insects, and through raw or prepared foods, shall be subject to such necessary supervision and control as shall be reasonable for the protection of the public health. The Department of Health, through its accredited agents, may compel screening of the premises or of patients sick with any of the diseases mentioned in Section 2, and may compel adequate sanitation of privy vaults and cesspools and the protection of their contents by proper construction, by screening against insects, and by the disinfection of all parts of such vaults and their contents, at such periods of time or at such intervals of time, as shall be deemed necessary for the protection of the public health. Provided that failure to comply with any provisions of the preceding section on the part of the tenant, lessee, or owner of said property or properties, said Department of Health, through its proper agents, may take such immediate action as shall be reasonable and adequate to protect the public health.

Section 878. It shall be unlawful for any unauthorized person to destroy, deface, remove, or obstruct any placard or other notice that has been posted as a warning to the public.

Section 879. Any violation of these regulations shall be subject to a penalty of not less than five (5) dollars, nor more than one hundred (100) dollars, for each and every offence.

Adopted by the Board of Aldermen, January 24, 1917.

Approved by the Mayor, January 29, 1917.

Operative and in effect February 5, 1917.

One especially important practical point dwelt on in previous articles is the importance of searching for the convalescent carrier. In that the majority of such were found in former times to have been declared well by the physician, but no such information had been given to the health authorities, the importance of seeing every infectious individual as soon as the physician is through with treatment is of the greatest value in preventing recurrent cases. The usual procedure of removal of the card of isolation and freedom of contact with further individuals, based on time limits, is the weakest point in prevention of all communicable diseases.

We are told that frequently the failure of cases to be reported is the cause of any frequency. To control such I have had in practice for the past two years a postal card notification of school absentees of over three half-day sessions. Those in sections where it was known that no physician would be called early or where the physician generally called was not to be relied on, would be immediately investigated. All neighborhood absentees where any known infectious disease existed or where the absentee had been a previous case, also demonstrated the value of follow-up work for demonstration of cases. The card is as follows, and is self-explanatory:

School .... Room ....
Date 191
Name ....
Address ....
Now out of school—
Illness said to be ....

Sent from school
  with sore throat ....
  with vomiting ....

(Do not fill in.) (B. of H. Record.)
KL ....
Sc. ....
Me. ....
Sept. ....
Wh. Cgh. ....
Ch. Px. ....
C. Sp. M. ....
Grp. ....
Pneum. ....
Typ. ....
Herp. ....
Accid. ....
Personal ....
Family ....

With the demonstration that carriers were of much greater importance than cases for true prevention, the school card became available by impressing on the school teachers that nasal discharges other than watery head colds were cause for investigation. School physicians and nurses also were instructed to exclude or culture such. Illness in the family in other than school children is frequently found through questioning of the school child by the teacher, who in turn notifies me on the card. There is possible then a so very accurate knowledge of all illnesses, neighborhood and house, as to make possible a large proportion of the control. That left consists of illnesses among the older or younger, where there are no school children. If now we take a nurse and localize her activities to such a part of the population as may be covered by at least weekly visits, there may be gained a measure of control. Inasmuch as I have shown that there are factors which assist in the making of and the continuing of individuals as carriers, I have gone further in this latter step with the work of the nurse. On her initial survey she not only records the number of children and their individual condition as to present or previous illnesses or as to being possible carriers, but she also records the individual sanitary defects of toilets, handling milk and food, and, in general, the unsanitary surroundings, including dampness of basements, which is one of the special factors. The correction of such is a matter for reference to other departments. While in terms then of communicable diseases, the information obtained by such fundamental work makes possible a hitherto unrealizable coördination of all health activities as to each and every bureau even in advance of complaints. The sum-total brings us back to the basis of the old public-health control of disease.

If then the system be made exact by sufficient nurses to be the recording eyes of each and every district, we can uncover all cases of each and every disease, as well as the carriers. The latter element is that of preparedness for the prevention of diseases and, successful as it has been proven by me in diphtheria and scarlet fever, might better be applied for controlling all communicable diseases rather than the application of regulations which have not controlled previously known so-called contagious diseases.

SUMMARY.

Health authorities are directly responsible for the frequency of communicable diseases. A system for such control should reach further than the present-day dependency of reporting of cases by physicians. There is possible a system for the investigation of and the finding of those individuals at the time they are carrying, in inflammatory secretions, definite causative organisms of communicable diseases. Such a system, fully developed, includes the previously predominant sanitation of premises as an important adjunct to the sanitary supervision of individuals, coördinating all the health activities. The definiteness of results obtained from such in terms of demonstrable abnormalities of carriers in the respiratory diseases studied (the work of others on typhoid fever is in accord), is a logical reason for such investigation of all communicable diseases.

IDIOPATHIC EPILEPSY A SYMPATHICOPATHY.

By Edward A. Tracy, M.D., Boston.

Previous research work by the writer had established the fact that the normal reaction of the skin to a gentle stroke with a suitable instrument, such as a wooden tongue depressor, is a brief-lasting vasodilation, followed by a vasoconstriction in the stroked area lasting a couple of minutes.[1]

One day, on testing a patient with idiopathic epilepsy, he noted with astonishment the intensity in color and the exceeding long duration of the vasoconstriction reaction that followed the stroking. Later, he was struck by the variation at different times in the intensity and duration of the vasoconstriction reaction in this case, and the irregularity in point of time of its appearance—it sometimes appearing six seconds after applying the evoking stroke, at other times not until thirty seconds had elapsed. All this was found, on comparison with the reactions obtained in healthy individuals, to be decidedly abnormal. Objective phenomena that were visible and measurable in epilepsy certainly invited careful study. For a period of two and a half years this case was carefully observed, vasoconstriction reaction tests systematically made twice a day for a large part of that time, the occurrence of convulsive attacks and other physical phenomena were noted, and the observations were carefully recorded. Ninety other cases of idiopathic epilepsy were examined during that time and the objective phenomena observed in them were recorded. The data thus gathered, constituting some seventeen hundred observations, together with the photographs taken of vasoconstriction

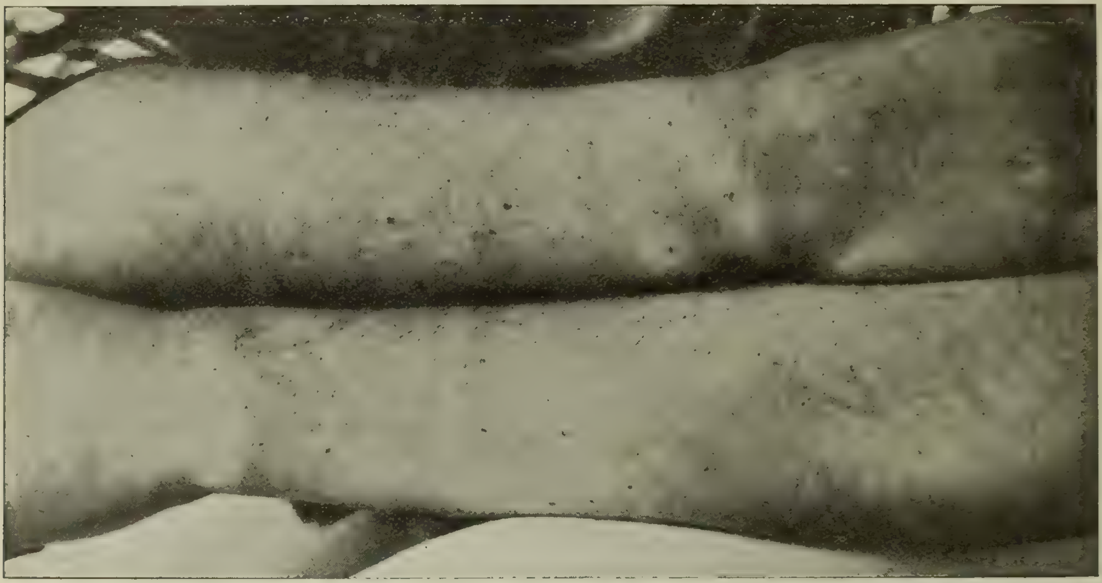

Plate A.—Showing vasoconstriction spots and pigment spots; also, the vasoconstriction reaction to stroking, which shows faintly, the plate having been exposed at the beginning of the reaction.

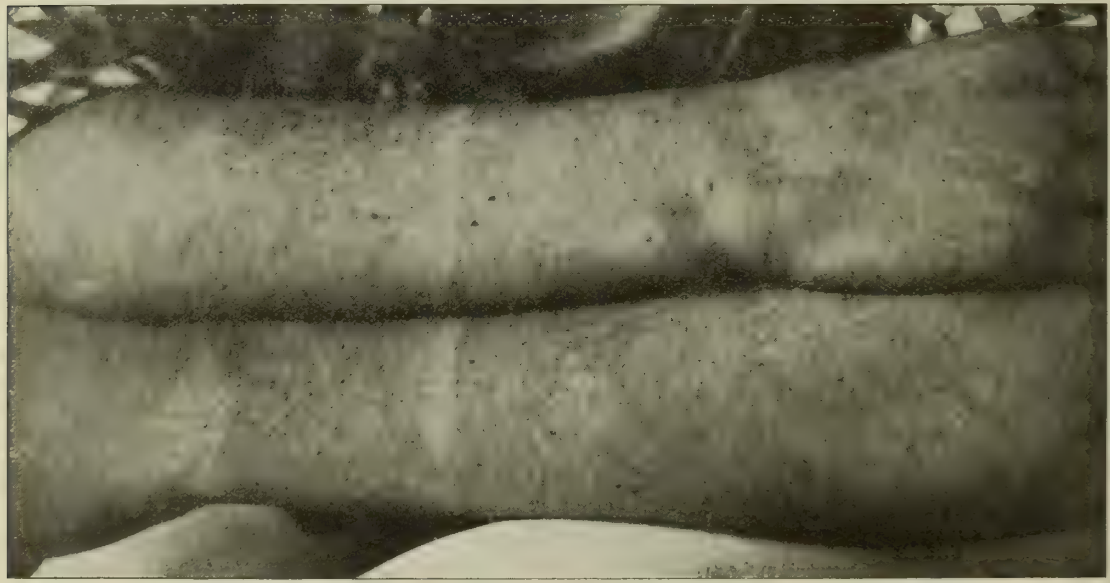

Plate AA.—Showing vasoconstriction spots and pigment spots as in Plate A; also newborn vasoconstriction spots (near elbow of the right forearm) and the fully developed vasoconstriction reactions to stroking. Note the difference in these reactions on the forearms, though evoked with the same instrument. This plate is from a photo taken a minute after that from which Plate A is taken.

phenomena, are the basis of this study of epilepsy.

At the outset it must be stated that these observations were made and recorded without any idea of their signification. The phenomena noted—physical objective facts—were deemed, as such, worthy of careful observation and record. The records, a portion of which are here copied, remain as originally made, save the numbering of the observations, since done for convenience. A long period of observation and a large gathering of facts reveal—as will be shown—that idiopathic epilepsy is a sympathicopathy, a disease of the sympathetic neurones.

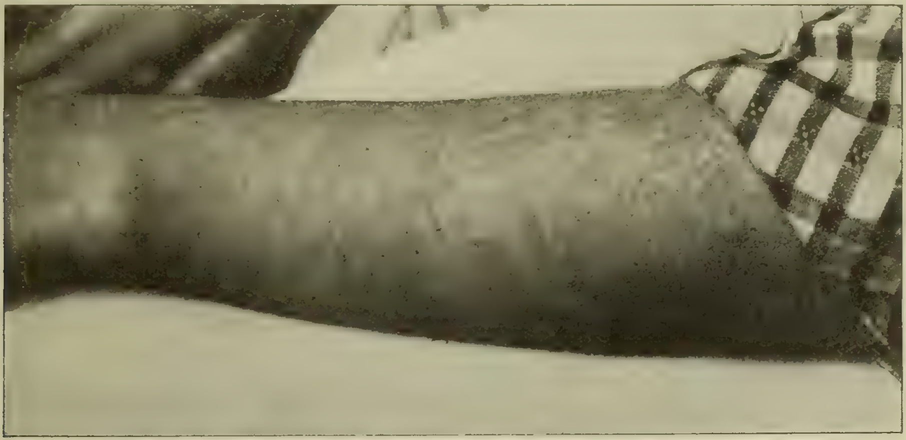

Plate B.—Showing a chronic vasoconstriction spot (near center of forearm) and pigment spots.

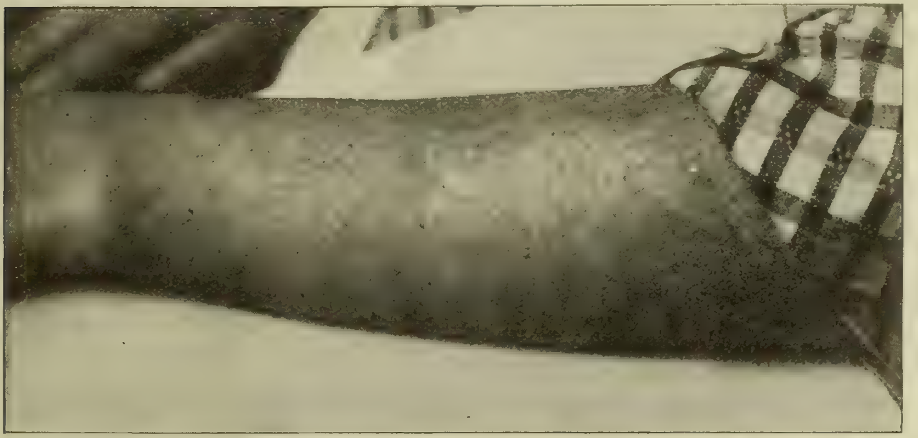

Plate BB.—Showing the same as Plate B, and also a newborn vasoconstriction spot (located about ¼ inch from edge of sleeve) less than a minute old, as this plate is from a photo taken one minute after that from which Plate B is taken.

Before proceeding to study the recorded observations, it may not be amiss to discuss briefly the phenomena of reflex vasoconstriction—the vasoconstriction reaction that is evoked by stroking the skin. The white streak that follows stroking the skin of a normal individual and lasts a couple of minutes is a vasoconstriction reaction, caused by the involved blood vessels becoming constricted and squeezing out the blood that gives color to the skin. This reaction cannot be attributed to a local smooth-muscle reaction brought about by the application of mechanical stimuli, for the muscle tissue does not come in contact with the mechanical irritant. Further, in the normal individual there is a difference in the reaction time of the face and the forearm,—the vasoconstriction coming quicker in the forearm after stroking than in the face,—although the skin structure is the same. The vasoconstriction is evidently brought about by the vasoconstriction nerves, for on stroking the face, a diffuse vasoconstriction frequently occurs—outside the stroked area. This can be explained only by nerve action. Moreover, the vasoconstriction reaction to stroking has all the elements of a true reflex, viz.: stimuli going over afferent fibers (the sensory nerves innervating the skin), stimuli coming over efferent fibers (the vasoconstrictors), and muscular action (the vasoconstriction that results).

The vasoconstriction reaction to stroking, depending, as it does, upon nerve action, it follows that variations in the reaction time (the reaction time is the time, in seconds, that it takes for the reaction to become visible after making the evoking stroke) depend upon the irritability of the nerves involved in the reaction. If the sensory nerves are normal (other elements of the reaction being equal), it follows that the variations in the reaction times must be due to the condition of the vasoconstriction fibers,—the sympathetic neurones. That the sympathetic neurones are abnormal in idiopathic epilepsy is proven by observations made on the vasoconstriction spots observable in this disease, and by the photogravures published with this essay. The white spots observed on the forearms of patients were seen to become whiter at times, to fade away at other times, so that there could be no doubt of their being due to vasoconstriction. As there were no stimuli from without, as in the case of reflex vasoconstriction, it is evident the spots demonstrate an abnormal discharge of stimuli over vasoconstrictor, sympathetic fibers. Further proof of this abnormality of vasoconstrictor nerves is furnished by the unerring eye of the camera, which caught vasoconstriction spots in the very making, as it were. Plates A and B, and AA and BB are of the same objects, the forearms of an epileptic (Case 1 in the records), the plates AA and BB having been exposed to the objects one minute after the plates A and B had been exposed. On both pates AA and BB are seen vasoconstriction spots not appearing in the plates A and B. These spots, therefore, had origin in the minute of time elapsing after the plates A and B had been exposed—and are pictures of newborn vasoconstriction spots. They demonstrate a pathologic discharge of stimuli along sympathetic fibers, originating evidently from diseased nerve cells.

The vasoconstrictors, sympathetic neurones, already shown to be abnormal by the evidence of the vasoconstriction spots, are farther involved in the abnormalities of the vasoconstriction reaction time, which evidently depends upon the irritability of the sympathetic neurones involved in the reaction. The records gathered in the study of ninety cases of idiopathic epilepsy show the character of some of the abnormalities detected in the sympathetic neurone reactions, and their relation to convulsions and other phenomena of epilepsy.

Case 1. H. D., female, aged 16 years. Convulsions in infancy for two weeks. Measles at five years. At seven years attacks of petit mal, which changed to attacks of grand mal at eight years. Convulsions since then have increased in severity, until they averaged sixteen attacks every month from her eleventh to her fifteenth year.

Observation 13, Aug. 9, 1916. Reaction time: left face, 14 seconds; right face, 26 seconds. Obs. 14. Two white spots were noted on the right forearm, one of which was seen to fade and return again.

Observation 13 shows a marked difference in the reaction times of the face, the right being slower than the left. In the normal individual these reactions appear on both sides of the face in equal times after the evoking stroke is made. Normally the face reactions balance. Obs. 78. Sept. 1, 1916. Reaction time: left forearm, 11 seconds; right forearm, 25 seconds.

In the normal individual the reaction time for reflex vasoconstriction on both forearms is the same. The lack of balance—unequalness—in the reaction times of both sides of the face and of both forearms, shown in the above observations, was frequently observed. The records show that in a series of observations made in this case during the period from August 1, 1916, to April 3, 1917, it was noted 198 times out of 403 tests of the vasoconstriction reactions made during that time. In 73 observations made on the vasoconstriction reactions, in 59 other cases of idiopathic epilepsy, this abnormality was recorded 42 times. These figures made an allowance in the readings of four seconds for errors of observation. There need be no question, therefore, of the frequency of this abnormality in this disease. Besides this inequality in the reaction times of both sides of the face and of both forearms, there is a continual variation in the reaction times; apparently without rule or reason they vary up and down, at one time quicker on the right side, at another time quicker on the left. This continual variation in the reaction times is shown by the following observations copied from the records of Case 1. Five successive observations for ten periods, a month apart, are here copied.

Sept. 5, 1916. Obs. 87, at 1 p.m. Reaction time: left forearm, 13 seconds; right forearm, 20 seconds; left face, 11 seconds; right face, 10 seconds. Obs. 88. 6 p.m. Reaction time: left forearm, 13 seconds; right forearm, 15 seconds; left face, 16 seconds; right face, 12 seconds.

Sept. 6, 1916. Obs. 89. 11.30 a.m. Reaction time: left forearm, 13 seconds; right forearm, 11 seconds; left face, 15 seconds; right face, 15 seconds. Obs. 90. 6 p.m. Reaction time: left forearm, 18 seconds; right forearm, 22 seconds; left face, 10 seconds; right face, 13 seconds.

Sept. 7, 1916. Obs. 91. 12.15 p.m. Reaction time: left forearm, 11 seconds; right forearm, 17 seconds; left face, 11 seconds; right face, 16 seconds.

Oct. 7, 1916. Obs. 168. 1 p.m. Reaction time: left forearm, 16 seconds; right forearm, 16 seconds; left face, 14 seconds; right face, 6 seconds. Obs. 170. 7 p.m. Reaction time: left forearm, 12 seconds; right forearm, 17 seconds; left face, 12 seconds; right face, 8 seconds.

Oct. 8, 1916. Obs. 171. 11.30 a.m. Reaction time: left forearm, 16 seconds; right forearm, 14 seconds; left face, 8 seconds; right face, 14 seconds. Obs. 173. 7.30 p.m. Reaction time: left forearm, 15 seconds; right forearm, 13 seconds; left face, 7 seconds; right face, 9 seconds.

Oct 9. 1916. Obs. 175. 1 p.m. Reaction time: left forearm, 20 seconds; right forearm, 15 seconds; left face, 10 seconds; right face, 12 seconds.

Nov. 5, 1916. Obs. 264. 11 a.m. Reaction time: left forearm, 20 seconds; right forearm, 14 seconds; left face, 19 seconds; right face, 18 seconds. Obs. 266. 7.15 p.m. Reaction time: left forearm, 19 seconds; right forearm, 19 seconds; left face, 12 seconds; right face, 12 seconds.

Nov. 6, 1916. Obs. 268,. 9 a.m. Reaction time: left forearm, 19 seconds; right forearm, 19 seconds; left face, 16 seconds; right face, 17 seconds. Obs. 270. 7.30 p.m. Reaction time: left forearm, 21 seconds; right forearm, 16 seconds; left face, 13 seconds; right face, 10 seconds.

Nov. 7, 1916. Obs. 271. 8.40 p.m. Reaction time: left forearm, 13 seconds; right forearm, 15 seconds; left face, 16 seconds; right face, 14 seconds.

Dec. 5: 1916. Obs. 394. 8.45 a.m. Reaction time: left forearm, 14 seconds; right forearm, 13 seconds; left face, 11 seconds; right face, 14 seconds. Obs. 396. 7 p.m. Reaction time: left forearm, 17 seconds; right forearm, 13 seconds; left face, 10 seconds; right face, 10 seconds.

Dec. 6, 1916. Obs. 399. 9 a.m. Reaction time: left forearm, 15 seconds; right forearm, 20 seconds; left face, 13 seconds; right face, 14 seconds. Obs. 401. 7 p.m. Reaction time: left forearm, 13 seconds; right forearm, 17 seconds; left face, 8 seconds; right face, 11 seconds.

Dec. 7, 1916. Obs. 404. 9 a.m. Reaction time: left forearm, 18 seconds; right forearm, 16 seconds; left face, 13 seconds; right face, 14 seconds.

Jan. 4, 1917, Obs. 496. 9 a.m. Reaction time: left forearm, 25 seconds; right forearm, 17 seconds; left face, 16 seconds; right face, 20 seconds. Obs. 497. 7 p.m. Reaction time: left forearm, 18 seconds; right forearm, 15 seconds; left face, 15 seconds; right face, 10 seconds.

Jan. 5, 1917. Obs. 499, 9 a.m. Reaction time: left forearm, 15 seconds; right forearm, 15 seconds; left face, 16 seconds; right face, 14 seconds. Obs. 500. 7.30 p.m. Reaction time: left forearm, 15 seconds; right forearm, 15 seconds; left face, 10 seconds; right face, 11 seconds.

Jan. 6, 1917. Obs. 502. 10.15 a.m. Reaction time: left forearm, 12 seconds; right forearm, 17 seconds; left face, 15 seconds; right face, 16 seconds.

Feb. 5, 1917. Obs. 584. 8 p.m. Reaction time: left forearm, 18 seconds; right forearm, 14 seconds; left face, 13 seconds; right face, 11 seconds.

Feb. 6, 1917. Obs. 585. 7.30 p.m. Reaction time: left forearm, 10 seconds; right forearm, 15 seconds; left face, 9 seconds; right face, 11 seconds.

Feb. 7, 1917. Obs. 587. 7.30 p.m. Reaction time: left forearm, 15 seconds; right forearm, 14 seconds; left face, 15 seconds; right face, 14 seconds.

Feb. 8, 1917. Obs. 588. 7 p.m. Reaction time: left forearm, 15 seconds; right forearm, 13 seconds; left face, 13 seconds; right face, 12 seconds.

Feb. 10, 1917. Obs. 591. 8 p.m. Reaction time: left forearm, 16 seconds; right forearm, 10 seconds; left face, 12 seconds; right face, 16 seconds.

March 7, 1917. Obs. 640. 9 a.m. Reaction time: left forearm, 20 seconds; right forearm, 13 seconds; left face, 15 seconds; right face, 14 seconds. Obs. 641. 8 p.m. Reaction time: left forearm, 12 seconds; right forearm, 17 seconds; left face, 12 seconds; right face, 11 seconds.

March 9, 1917. Obs. 643. 8 p.m. Reaction time: left forearm, 15 seconds; right forearm, 15 seconds; left face, 12 seconds; right face, 11 seconds.

March 10, 1917. Obs. 645. 9 a.m. Reaction time: left forearm, 19 seconds; right forearm, 20 seconds; left face, 12 seconds; right face, 17 seconds. Obs. 646. 7 p.m. Reaction time: left forearm, 14 seconds; right forearm, 20 seconds; left face, 14 seconds; right face, 12 seconds.

April 5, 1917. Obs. 705. 9 a.m. Reaction time: left forearm, 24 seconds; right forearm, 15 seconds; left face, 15 seconds; right face, 13 seconds. Obs. 706. 7.30 p.m. Reaction time: left forearm, 18 seconds; right forearm, 15 seconds; left face, 10 seconds; right face, 10 seconds.

April 6, 1917. Obs. 708. 9.30 a.m. Reaction time: left forearm, 15 seconds; right forearm, 16 seconds; left face, 11 seconds; right face, 12 seconds. Obs. 709. 8 p.m. Reaction time: left forearm, 11 seconds; right forearm, 11 seconds; left face, 10 seconds; right face, 10 seconds.

April 7, 1917. Obs. 711. 10.30 a.m. Reaction time: left forearm, 15 seconds; right forearm, 9½ seconds; left face, 12 seconds; right face, 13 seconds.

May 5, 1917. Obs. 804. 9.30 a.m. Reaction time: left forearm, 13 seconds; right forearm, 11 seconds; left face, 13 seconds; right face, 14 seconds. Obs. 805. 8 p.m. Reaction time: left forearm, 14 seconds; right forearm, 15 seconds; left face, 16 seconds; right face, 12 seconds.

May 6, 1917. Obs. 807. 10 a.m. Reaction time: left forearm, 27 seconds; right forearm, 20 seconds; left face, 13 seconds; right face, 13 seconds. Obs. 809. 8 p.m. Reaction time: left forearm, 13 seconds; right forearm, 15 seconds; left face, 14 seconds; right face, 12 seconds.

May 7, 1917. Obs. 811. 9 a.m. Reaction time: left forearm, 18 seconds; right forearm, 17 seconds; left face, 13 seconds; right face, 15 seconds.

June 7, 1917. Obs. 910. 9 a.m. Reaction time: left forearm, 17 seconds; right forearm, 15 seconds; left face, 13 seconds; right face, 9 seconds.

June 8, 1917. Obs. 912. 9 a.m. Reaction time: left forearm, 16 seconds; right forearm, 14 seconds; left face, 18 seconds; right face, 15 seconds. Obs. 913. 7.30 p.m. Reaction time: left forearm, 15 seconds; right forearm, 15 seconds; left face, 11 seconds; right face, 10 seconds.

June 11, 1917. Obs. 915. 9 a.m. Reaction time: left forearm, 23 seconds; right forearm, 18 seconds; left face, 20 seconds; right face, 17 seconds. Obs. 916. 7 p.m. Reaction time: left forearm, 18 seconds; right forearm, 18 seconds; left face, 13 seconds; right face, 12 seconds.

Despite the irregular, apparently erratic behavior of the reaction times manifested in the foregoing observations, a most interesting relation was discovered between the reaction times and the onset of convulsions. A careful daily record of the reaction times and of the occurrence of convulsions, during a period of two years, revealed this relation between them: a quickening of one or more of the reaction times took place within twelve hours before the onset of convulsions. Since the vasoconstriction reaction time indicates the irritability of the sympathetic neurones involved in the reaction, this demonstrates that an increase in irritability is manifested by sympathetic neurones preceding a convulsion. The following observations, copied from the records of Case 1, show the frequency of this lessening of the reaction time, more especially the face reaction time, preceding convulsions.

Sept. 12, 1916. Obs. 102. 12.30 p.m. Reaction time: left forearm, 12 seconds; right forearm, 13 seconds; left face, 10 seconds; right face, 11 seconds. Obs. 103. 6 p.m. Reaction time: left forearm, 8 seconds; right forearm, 13 seconds; left face, 10 seconds; right face, 11 seconds. Ten minutes after the above observation was made an attack of convulsions occurred.

Sept. 25, 1916. Obs. 135. 6 p.m. Reaction time: left forearm, 17 seconds; right forearm, 12 seconds; left face, 14 seconds; right face, 10 seconds. That night, at 2.30, patient had an attack of convulsions, followed the next day (Sept. 26) by five attacks, at 8.15, 11.40 a.m., and 2.10, 3.30, and 5.20 p.m.

Sept. 26, 1916. Obs. 138, 5.15 p.m. Reaction time: right forearm, 9 seconds; right face, 12 seconds. This incomplete testing of the reaction times, immediately preceded the attack of convulsions at 5.20 p.m., the attack preventing the complete testing.

March 28, 1917. Obs. 682. 8 p.m. Reaction time: left forearm, 13 seconds; right forearm, 10 seconds; left face, 10 seconds; right face, 9 seconds. The following morning, at 3 a.m., and 7.30 a.m., the patient had attacks of convulsions, and attacks at 10 and 11.30 a.m. An hour before the attack at 10 a.m., the following observation of the reaction times was made. Obs. 684. 9 a.m., March 29, 1917. Reaction time: left forearm, 22 seconds; right forearm, 13 seconds; left face, 11 seconds; right face, 14 seconds.

Jan. 19, 1917. Obs. 540. 9 a.m. Reaction time: left forearm, 15 seconds; right forearm, 12 seconds; left face, 13 seconds; right face, 11 seconds. Patient had an attack of convulsions at 1 p.m., four hours after the above observation was made.

Oct. 5, 1916. Obs. 165. 7 p.m. Reaction time: left forearm, 12 seconds; right forearm, 10 seconds; left face, 11 seconds; right face, 10 seconds. On the following morning at 6.30 a.m. the patient had an attack of convulsions.

Oct. 12, 1916. Obs. 185. 7 p.m. Reaction time: left forearm, 15 seconds; right forearm, — seconds; left face, 12 seconds; right face, 8 seconds. The next morning at 7.45, patient had attack of convulsions.

Oct. 13, 1916. Obs. 187. 8 p.m. Reaction time: left forearm, 14 seconds; right forearm, 11 seconds; left face, 10 seconds; right face, 11 seconds. The next morning at 7 o'clock, patient had an attack of convulsions.

Oct. 22, 1916. Obs. 218. 10.30 a.m. Reaction time: left forearm, 13 seconds; right forearm, 15 seconds; left face, 15 seconds; right face, 10½ seconds. Patient had an attack at 3 p.m., four and a half hours after the taking of the reaction times.

Nov. 7, 1916. Obs. 274. 7.30 p.m. Reaction time: left forearm, 18 seconds; right forearm, 16 seconds; left face, 13 seconds; right face, 10 seconds. Patient had attacks of convulsions at 4 and 6 o'clock the next morning.

(To be continued.)

Society Report.

THIRTY-SECOND ANNUAL MEETING OF THE AMERICAN ORTHOPEDIC ASSOCIATION.

Army Medical School, Washington, D.C.,
April 22-23, 1918.

ORTHOPEDIC WAR HOSPITALS, THEIR REQUIREMENTS AND EQUIPMENT.

Lieut.-Col. Clarence L. Starr, R.A.M.C., gave an address on "Orthopedic War Hospitals, Their Requirements and Equipment." These organizations, he said, should be termed "orthopedic," not "reconstruction" centers. Treatment of fractures involved consideration of many important points: first, fractures with solid union should never be operated on, even when shortening occurred; second, fractures with infection should not be united, even if 6 months had elapsed since injury,—the presence of streptococci had been demonstrated half a year later; third, the sliding graft had not been found successful,—the autogenous graft from the tibia being the most satisfactory; fourth, no suppurating fracture should be united. In regard to operations upon nerves, no one could, as yet, speak with authority on these injuries. It could be said, however, that if careful examination of the nerve lesion, and testing the galvanic, electric and protopathic response, gave no result, extirpation was indicated. A frequent mistake was to try to suture the nerve when the function of adjacent muscles was destroyed. In the diagnosis of stiff cartilage the surgeon should be guided by the orthopedic surgeon. Sixty per cent. of these cases were wrongly diagnosed and were made worse by operation. Histories of this kind were unreliable, as one patient was apt to suggest the idea to another who could deceive the surgeon. In regard to tendon transplantation, the successes following this treatment in the arm were marvelous, but not in the leg on account of the weight-bearing function of the latter. In regard to manufacture of artificial limbs: in Canada this was under government control, which eliminated commercial speculation and competition, and assured a standardization of articles manufactured. It was found also that an orthopedic hospital, connected with a general hospital, was satisfactory, as it enabled orthopedic surgeons and neurologists to coöperate. The administrative work of both was combined, to secure economic results. One inspector supervised both hospitals. One assistant surgeon cared for 500 patients, with one junior surgeon and anesthetist to each 100 patients. Functional cases were sent to the orthopedic surgeon for diagnosis and to detect malingering. It was found a mistake to put an orthopedic surgeon in a general hospital, as his work was sidetracked. His services could be put to good use in the clearing station behind the lines, to treat joint lesions. In the post-operative treatment of the wounded, massage, electro- and hydrotherapy had a useful place. The gymnasium was a very active part of the whole scheme. Games were found to effect the patient's cure, unconsciously; while the curative workshops tended to raise greatly the morale of the patient. This branch of the treatment bridged the gap between hospital and civil life. The men were employed on artificial limb making, machine shop work, boot and clothing work. For this work the men were allowed to wear uniform; the hospital "blue" being used simply to discipline a refractory patient. Prolonged hospitalization and the hospital blue had a depressing effect, and the use of the uniform and the sense of accomplishment went far to restore confidence to the wounded man and to enable him to return to useful citizenship.

Captain F. C. Kidner, M.R.C., A.E.F., gave a brief description of the work in Hyde Park, London, at St. Katharine's Lodge, a beautiful roomy house, with spacious grounds, loaned to the British Government by Mr. Solomon of New York. This hospital, although used for British soldiers, was under the American Red Cross. It contained 50 officers' beds, and there was always a long waiting list. The American Red Cross had entire supervision, except as regards disability decisions. The patients proved very willing and anxious to carry out treatment. The masseur employed was a blind soldier who had become expert at this work. This gift of Mr. Solomon, by placing English officers under control of an American staff, was serving as a most efficient link in the promotion of good understanding between the two great English-speaking nations.

DISCUSSION, COL. STARR'S PAPER.

Major J. A. Hornsby said that in the civil hospitals in this country the unanimous conclusion had been reached that when the patient entered the hospital he was entitled to treatment for whatever might ail him. If any complications arose in his condition he should receive treatment for the same. The hospital, therefore, had to be a general hospital. To him, Major Hornsby said, it was unthinkable that a patient with an eye condition should have to be moved to an eye hospital; yet that very thing was occurring lately in the large cities in this country. He knew of a case that developed pneumonia; the patient had to be moved because he could not be treated in the general hospital. In the new field upon which they were now embarking, it would be found necessary to change this phase of the question. At first, when it was decided necessary to create an army, it was decided to take only able-bodied men. A little later, certain remedial defects were noted, and the men were required to submit to operation. Later still, another ruling took effect. He was more than pleased to hear Colonel Starr say that these defectives should not be operated upon. The profession should be outspoken about that and not attempt to turn the Army into a curative establishment for defectives. He had been in many camps in this country and had seen men operated upon again and again to cure defects, without result. Before attempting to reconstruct defectives for active service, the available supply of men should be exhausted. The general hospitals now were for the care of diseases and injuries that had come upon men after becoming part of the military force, and the same thing should be true when they come back again. Then, if ever, they would be liable to complications of all sorts, and the hospitals should be qualified to take care of them. The hospital did not consist in equipment or capacity, but in the personality of its staff. It was not a collection of instruments and beds, but a place where men were competent to take care of the sick. It was easier to get equipment than to get competent men. It had been said that only in the special hospital did one find such personnel. That might be true, but Major Hornsby said that he had taken over three or four hospitals, amounting to a capacity of 2000 beds. These would be used as general hospitals, and it was expected that the trend of the hospital would follow the capacity of the men working in it. They would be great only if associated with prominent medical men.

Major W. G. Erving said that this subject of orthopedic war hospitals, introduced by Lieut.-Colonel Starr, was a tremendous one. Personally, he thought that there was no question that the orthopedic hospital should be absolutely separate. In England, experience had shown that those orthopedic centers which were doing the best work were those separated from work of other kinds. Hospitals at Hammersmith and Leeds, which were entirely orthopedic and which were equipped with 2000 beds, were getting the best results. The next best plan was an orthopedic center, united to the general hospital only from an administrative point of view. This was an economic advantage; also, the services of specialists in various branches could be interchanged, without any interference in the actual orthopedic work. It was necessary for the orthopedic center to take charge of many chronic cases; many adjuncts would have to be called in,—such as electrotherapy, the gymnasium, the curative workshop,—which could be connected with the center in colony form. The workshops necessarily had to be very elaborate and complicated and it would be impossible to have these in a general hospital.

Major S. C. Baldwin, M.R.C., said that there had not been much to do so far in the general hospitals. They acted as distributing centers and the orthopedic cases were sent on to other places. Major Baldwin could not agree that it was a good plan to have the work of the orthopedic hospital in connection with that of the general hospital, as the orthopedic man would be put in as an assistant to the general surgeon and his special value would be lost. Naturally, in a general hospital, the general surgeon would take all he could, and would take everything unless the orthopedic man happened to have a good deal of backbone and insisted on taking all that belonged to him. There had hardly been time as yet to work out this point.

Lieut.-Colonel Starr said, in conclusion, that he thought it would be a great disaster in this country to use the orthopedic hospital as a subsidiary to the general hospital. That seemed to him to be the case of the tail wagging the dog. The plan to put the orthopedic hospital under the same administration as the general hospital had its advantages and disadvantages; the former being the chance to co-operate with members of the staff in other branches. There were also economic advantages. In Canada the units were large separate hospitals and the patient was under control of the orthopedic man, except for questions of discipline and administration, which the orthopedic surgeon was not concerned with. Lieut.-Col. Starr said he sincerely hoped this would be worked out so that the orthopedic hospital would have its own staff, although he felt that general surgeons had a just claim to the work if they could do it as well as the orthopedic men. He had seen some of the best work done by a general surgeon with only short orthopedic training.

THE SPECIAL TRAINING BATTALION OF THE TWENTY-SIXTH DIVISION.

This subject was presented by Captain Z. B. Adams. This Battalion was established in March, 1917, with the object of the reclamation of as many men as possible by means of special training. Many serious physical defects were remedied and the men put into such physical condition that they could perform some service behind the line. It was found that 86% of cases could be thus improved. Fourteen per cent. of cases showed defects that entirely unfitted them for military service. Cases were divided into four groups with regard to seriousness of the defect. The classification was: I, men with faulty posture and slight pronation; II, men with metatarsalgia; III, men with acute strain or contracted tendons, faulty posture and back strain; IV, serious defects requiring operation. The camp was in no sense a rest camp. All work was done out of doors and was of a military nature. The men were gradually advanced through five companies, and the fifth company did really hard work. Three hundred and seventy-three cases had been under training and in six weeks the battalion had been able to return 88 men as fit to carry on military duty and not likely to break down.

THE VALUE OF CASUAL DETACHMENT AS TESTED AT CAMP CODY.

This paper was presented by Captain E. R. Rich. He said that the tendency was now to turn from hospital treatment to camp training. At first the man with flat feet was turned over to the hospital and he was apt to pass the good word along to his companions, so that the hospitals were filled with men with flat feet. It was found necessary, therefore, to deal with these cases outside of the hospital. Since the establishment of the first Casual Detachment work in Mexico, 8 out of 11 camps had followed suit. Such names as the "soldiers' salvage school" and the "orthopedic-back-to-duty class" had been bestowed on this work. The object of the work was to build up weak structures which were the cause of static foot defects.

It was found better to have a line officer to maintain discipline, as he could do this better than the medical officer. To give the best results the soldiers must be segregated. Military habits were not relaxed in order that the men might be impressed with the reality of war. The work was made so hard and monotonous that the men were glad to get back to line duty. Class A were graduates for line duty and Class B comprised the malingerers. These men were put under such hard and intensive drill that they were glad to get back to the line, having first been compelled to sign the oath of cure. There were four drills every morning, six in the afternoon, and no difference was made for Sundays. The officers were there to restrain over-action in the few and to stimulate action in the many. These methods had eliminated the over-congestion in the hospitals and had resulted in the return of 60% of the men to the line. There was no doubt that orthopedic methods in this war had helped orthopedic surgery to win its spurs. One of the most helpful of orthopedic measures was to be found in the training of the Casual Detachment.

(To be continued.)

Book Review.

The Practice of Pediatrics. By Charles Gilmore Kerley, M.D., Professor of Diseases of Children, New York Polyclinic Medical School and Hospital. Second edition, revised and reset. Philadelphia and London: W. B. Saunders Company, 1918.

Many changes have been made in this, the second edition, of this well-known work. Many new articles have been added and a number of the chapters have been rewritten, while a great deal of old material has been eliminated. This book will continue to be, as it has been, most useful to physicians, whether they are in general practice or specialized in the Diseases of Children.

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SICKNESS INSURANCE OR SICKNESS PREVENTION?

RESEARCH REPORT No. 6 of the National Industrial Conference Board for May, 1918, deals with the question, "Sickness Insurance or Sickness Prevention?" In this report, an attempt has been made to emphasize the enormous burden which sickness and physical disability place on society and industry. The necessity is imperative for a thorough study of the practical possibilities of a program of sickness prevention, with a view to its speedy adoption as a national policy. Examinations for military service disclosed the fact that one out of every three men was unfit for service. At least 5% of the entire male population is afflicted with venereal disease. The average annual loss by sickness of 40,000,000 wage-earners is seven days, which represents a loss of from $500,000,000 to $750,000,000. This estimate takes no account of the incalculable loss due to impaired efficiency on account of illnesses and disabilities that do not result in absence from work. Two factors largely contributing to these defects are feeble-mindedness and venereal disease. These conditions call for a vigorous policy of remedial action.

The problem of sickness and physical disability is of particular concern to industry. Maximum efficiency cannot be obtained from a force of workers one-fourth of whom are suffering from such disabilities as defective vision, tuberculosis, alcoholism, or venereal disease Industry cannot be held responsible for this; such conditions as overcrowding, poor ventilation, and insufficient lighting are contributing factors, and could be prevented.

The advisability of prevention of diseases can be questioned only on the ground of cost, and a determination of the question whether their prevention would involve an expenditure out of proportion to the probable benefit. It has been estimated that the total annual cost would amount to from $700,000,000 to $1,000,000,000. A program calling for such expenditure would challenge critical examination and compel convincing demonstration of its merit. The experience of those European countries which have adopted sickness insurance on a comprehensive scale has not resulted in a decrease of sickness; instead, it has failed as a preventive agency and has placed a premium on inefficiency and fraud.

Underlying these considerations, however, the fundamental fact remains that all sickness and disability which can be prevented reasonably should not be allowed to remain unremedied until they impose a burden on the individual and society. Preventive work in case of communicable diseases—such as typhoid fever, tuberculosis, pneumonia, and diphtheria—has been brilliantly successful. The results which have been achieved through local effort with limited funds establish the need for careful investigation of the further possibilities of sickness prevention under a definite national policy. An investigating committee should consider these salient features: reduction in infant mortality; supervision of the health of school children, including treatment of various common defects; systematic instruction in personal hygiene, diet and living conditions; improvements in sanitation, housing, and milk and water supply; extension of free hospital and free clinical agencies; treatment of feeblemindedness and venereal diseases; the effect of occupation on health of workers. Such a program would minimize the necessity for compensation in the case of unpreventable diseases, and would remove a large part of the misery and poverty which preventable diseases now impose on the individual, society, and industry.

PHASES OF INDUSTRIAL FATIGUE.

With the necessity for the development of the industrial efficiency necessary for war purposes the desire to conserve the human material engaged therein has been the natural outgrowth to be expected. On the whole, the capacity of the worker is limited by his liability to fatigue. It is essential to determine the usual conditions surrounding the question of fatigue before any industrial changes in conformity to it are justified. While laboratory experiments are valuable, their value lies almost wholly in the development of methods for the testing of fatigue points. For the present purposes, the laboratory methods must be largely reënforced, if not replaced, by practical work in the field. In the field investigations are included, however, the laboratory investigations of the sense acuities of the individual workers. The individual capabilities of the workers can be established and an insight had into some of the reasons for early and undue fatigue. But the main field investigations embrace such matters as output, quality and quantity, accidents, and power consumption. All these factors have a close relation to fatigue in the workers. Much valuable information can be had from industrial plants which have kept accurate statistical records of these factors, and fatigue investigations become much simpler. For the war work these records are essential in determining waste either of material or of the human factor.

Fatigue is the diminution of activity after activity. It is the unrelaxed tension of activity that causes fatigue after a period of work (Public Health Reports, vol. 33, no. 11). It is important to determine the effect on this unrelaxed tension of rest periods, meal time, sleep, etc. The ability to recuperate from the effects of fatigue depends upon the individual capacity as well as upon general working conditions. But where the work is of a monotonous nature which allows of practically no work pauses, the fatigue curve will develop quickly and will be on the downward grade the whole of the day, with no change in its contour. Where the nature of the work allows many pauses there may be no fatigue curve at all. It is in the monotonous occupations in which the question of fatigue and its attendant loss of efficiency and deterioration in health conditions enters so largely. The reduction of the hours of labor per day and of the total number per week is the least that can be done to overcome these conditions. The testing for the fatigue curve by a per hour method is not satisfactory from the laboratory standpoint, but in the field, because of the fluctuations in the industries, it is the only feasible plan. Probably the best index of the amount of fatigue developed in an industry, and the consequent loss of efficiency, is the rise of the accident incidence. Usually it may be said that the rise in the number of accidents is due to the loss of attention and alertness from fatigue. On the other hand, it may be due to a rise in the amount of work done, for with increased work every element connected with plant operation must necessarily increase. Increased number of operations increases the accident danger. But increased efficiency means increased power consumption. If the accident incidence rose with the increase of power consumption it would indicate an increase of the efficiency. The reverse conditions with respect to the consumption of power and the number of accidents, would indicate loss of attention and alertness from fatigue. Technically, the estimate is made by dividing the number of accidents per hour by the amount of power consumed. The result will be a curve of the loss of attention and alertness from hour to hour, irrespective of the amount of work done. While the hourly method of testing fatigue requires so many observations, yet if enough of them are made, and the output of factories that have reduced the number of hours of labor is compared with those that have not, a clear idea will be had of the effect of the reduction of the hours of labor on output and efficiency. The war industries in Europe have realized the good effect of the reduction of the hours of labor in accordance with the capacity for fatigue. It must not be forgotten that even where there is fatigue the rapidity of the operations need not be reduced, but the number of accidents and missed operations increases. Attention and alertness are indicative, rather, of psychological fatigue than of physical fatigue, which is associated merely with rapidity of motion, under fatigue conditions, however, not accurate. Of course the sanitary conditions in a factory—light, heat, ventilation, etc.—as well as the initial health of the workers, influence to a great degree the whole question of fatigue capacity.

CARBOHYDRATES IN DIABETES.

In the progress of our knowledge of the nature of diabetes there has been a marked reaction against the entire withdrawal of the carbohydrates from the dietary of the diabetic. For a time there was even a tendency to administer carbohydrates as a curative measure, and the "carbohydrate cure" seemed all but established. Then came the understanding that the carbohydrates cannot be withdrawn from the dietary of the individual without increasing the tendency to acidosis, or of precipitating a grave acidosis where previous to the carbohydrate withdrawal there was only a mild one. It is found that when the carbohydrate withdrawal is persisted in, acetone bodies soon appear in the urine. As the sugar disappears the acidosis appears. It must be understood that the presence of sugar in the urine is of importance only as indicating that the sugar is not being oxidized and utilized. As long as enough sugar is oxidized there is no harm in some or even a great deal passing through unoxidized, but as soon as the amount oxidized becomes deficient then acetone appears. Even in rather severe diabetes the organism can oxidize some sugar. If in these cases not enough carbohydrates are given to satisfy the meager demands and oxidizing powers of the organism, acidosis follows, so that in cases treated with carbohydrate withdrawal, in whom acidosis threatens, carbohydrates must be administered to forestall the event. Moreover, with the withdrawal of the carbohydrates, so necessary for the production of heat and energy, the organism draws upon the proteins of the body for its carbohydrates. It is shown, in fact, that with the increase of the carbohydrate intake there is a decrease in the protein consumption. Whether the protein of the body is utilized in great quantities, or more proteins are consumed to make up for carbohydrate deficiency, increased protein metabolism means a large increase in the metabolic burden of the body. For the organism with a defective metabolic system, as evidenced by the presence of diabetes, this added metabolic activity is very harmful. Besides, protein metabolism is the most potent factor in the production of acid; indeed, protein food may be called acid food. In addition to the natural hypoalkalinity of diabetes there is, then, the increased acid production—and acidosis is bound to follow. The administration of carbohydrates reduces the protein metabolism sufficiently to prevent acidosis, where the carbohydrate oxidizing power is not too far gone.

When the value of administering carbohydrates in diabetes was first understood it was thought that certain carbohydrates behaved differently from others. Oatmeal was supposed to have a special value as a carbohydrate cure because it was thought that the starch in it had a special action; that it had certain special ferments or extractives of value; or that it reduced the permeability of the kidneys to sugar. None of these hypotheses has any substantiation, and any value that oatmeal has in the so-called "oatmeal cure" must be ascribed to the general value of carbohydrate administration, where there is a defective carbohydrate oxidation, and where the organism is using up its own body proteins to make up the deficiency naturally withdrawn because of the metabolic condition, or artificially withdrawn in a mistaken notion of treatment.

The most recent conception of the proper treatment of diabetes takes into consideration the metabolic disturbance at the base of the disease, as well as the part that the carbohydrates play in the disease. The starvation treatment has for its object, therefore, the resting of the metabolic system for the period of the starvation. The subsequent dietary treatment no longer contemplates the withdrawal of the carbohydrates, but rather that they be given in sufficient quantities for the needs of the system, without necessitating drawing on the body proteins. On the other hand, it is not intended to tax the metabolic processes by administering large quantities of food. Every element of food is reduced to the minimum needs of the body. When it is remembered that a reduction of half of every one's dietary would be beneficial rather than harmful, there need be no fear of underfeeding in an organism whose metabolic system is damaged. Most of all, is the protein kept at a minimum in order to reduce the tendency to acid production.

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THE SIMULATION OF DISEASE.

The fact of the simulation of disease has long been known to medicine, yet it has always been a difficult problem to detect the real simulator, that is, the voluntary one, who simulates for some selfish or ulterior purpose. All simulators are not, however, real or voluntary ones. Simulation of disease may occur in the insane, but particularly in those suffering from hysteria. The ability of the hysteric to simulate almost any disease is well known. Feigned injuries and diseases have long been a problem in accident jurisprudence. Here, nervous and spinal conditions are generally simulated. But it is important to distinguish between frank simulation and symptoms produced by trauma in those of inferior nervous constitution, which, although they are not organic in nature, savor very much of the idiopathic conditions in hysteria. It must be looked upon as hysteria where the exciting cause—the trauma—is patent.

Simulation of disease is usually carried out to avoid the carrying out of some just obligation or duty. Where the work to be done is of a group or unit nature, as aboard a vessel, and where the efficiency of the work depends upon the honest application of every worker, it is essential to detect the malingerer. Besides, the malingerer must not be allowed to shove his work on someone else's shoulders with impunity. The ship surgeon must be a knower of men, besides having a working familiarity with the usual types of simulation in order to distinguish the malingerer from those really ill, and in order that a grave injustice and often irreparable harm be not done to one really ill, but, under suspicion of simulation, forced to work. But military duty represents by far the most fertile field for the malingerer. The number concerned in military duty enormously multiplies the number who are likely to simulate disease in an effort to avoid unpleasant work, and the methods used in simulation become very numerous and confusing. It goes without saying that it is essential to detect the malingerer and to study and become familiar with the various methods employed, both as a matter of public policy and general justice to those who do not employ these methods. Numerous observers, especially in this war, have given valuable assistance in solving this problem. As a result of their work much of the malingering is capable of detection by those on the lookout for it. On the whole, however, the principle of detecting the malingerer depends upon bearing in mind the characteristics of the disease the malingerer intends to simulate. Usually it is hard to mimic Nature in every detail. Unusual variations must always excite suspicion, and if they cannot be detected as simulations by the ordinary methods, it is justifiable to isolate and observe the suspects. Often this is the only way to clear up any doubtful case.

There is almost no disease or defect that the ingenuity of the malingerer cannot simulate. Simulations may range from simple skin lesions induced by irritants to profound constitutional diseases. Albuminuria and renal disease is often simulated by the ingestion of large quantities of sodium chloride and milk; diabetes, with the injection of phloridzin; heart irregularities are produced with cordite, nitroglycerine, aconite, etc.; jaundice, with the ingestion of picric acid; hernia, with the injection of paraffin, and so on (Public Health Reports, Vol. 23, No. 45). The range of methods is almost limitless and can overcome the watchfulness of even the most alert. But it is just as necessary to exclude the unfit from duty as it is essential to detect the malingerer; otherwise much confusion and injustice will result.

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MEDICAL NOTES.

Health of Porto Rico.—The Commission of Health of Porto Rico has submitted a report for the year 1917. The report states that Porto Rico has become recognized as the best of the West Indies from a sanitary point of view and one of the best under the American Government. The provisions of the Jones Act, by which the department of health was created, are stated. The report of the Assistant Director of Sanitation describes municipal charity, medical attendance, hospitals, first-aid stations, poor relief, rural inspection; also, street cleaning, drainage, slaughter-houses, meat shops, bakeries, water works, and milk depots. Other reports of the draftsman, the veterinary division, the chemical laboratory, and the division of transmissible diseases, are included. Statistics of deaths and their causes are given, and the services of the insane asylums are described. There is given also a statement of insular revenue appropriations.

WAR NOTES.

Medical Promotions and Appointments.—Dr. Harold Johnson, of Lynn, has been commissioned captain in the Medical Officers' Reserve Corps. Preparatory to going to France, he will be assigned either to the Rockefeller Institute or the Bellevue Hospital in New York for training in the latest methods of European war surgery. Dr. Johnson is a graduate of Exeter Academy, Williams College, and Harvard. He was formerly assistant professor of surgery and surgical pathology in the University of California. In 1898, while a student at Harvard, he was commissioned assistant surgeon in the Navy and served in the expedition to Cuba.

Other appointments in the Officers' Reserve Corps and the National Army have been made in the Medical Reserve: first lieutenants, Dr. W. J. Ashland, Boston, and Dr. T. D. Brown, Roxbury.

British Surgeons Coming to U. S. for Conferences.—Sir William Arbuthnot Lane, consulting surgeon to Guy's Hospital, Sir James Mackenzie, physician to the London Hospital, and Col. Herbert A. Bruce, consulting surgeon of the British Armies in France, will leave for the United States soon to attend American medical conferences.

M. G. H. Doctors Commissioned.—The following appointments have been made in the Officers' Reserve Corps and National Army:

First Lieutenants, M.R.C.: L. N. Gay, Massachusetts General Hospital; T. M. Mabon, Massachusetts General Hospital; and F. A. Fead, of Willimansett. Captain, Q.M.C.N.A.: T. J. Cantwell, Boston.

Army Health.—The health of the Army in this country in general continued satisfactory during the week ending May 17. The death rate still is relatively low, while pneumonia cases reported for the week were only 345, compared with 504 the week before. The total deaths for the week were 77, as against 162 the week before. An excellent health record was made in the divisional camps, including the National Guard. Only thirty-seven cases of pneumonia were reported. The National Army camps compare unfavorably, epidemic diseases being more generally prevalent.

Care of Wounded at Boston City Hospital.—The Boston City Hospital can definitely offer fifty beds for care and treatment of soldiers and sailors returning to this city. No more accommodations are immediately available, if the present work for the civilian population is to be continued. If the Government would furnish tentage, however, the hospital could provide tent wards for one hundred and twenty-five additional patients, and might be able to accommodate between three and four hundred more, if corridors and verandas were used.

U. S. Liverpool Hospital.—The first hospital for American soldiers in Great Britain has just been opened in Liverpool. The hospital is known as American Red Cross Military Hospital No. 4, and is situated in the Mossley Hill district, about three miles from the downtown business part of the city. Already many American soldiers occupy its cheerful wards, and many others, in the convalescent stage, are walking about the spacious grounds.

The hospital proper occupies Mossley House, the former home of Dr. Edmund Knowles Muspratt. It is a typical old Gothic style English town house, and is situated on the highest elevation in the city. The head of the hospital is Major Udo J. Wile, Medical Officers' Reserve Corps, United States Army. He has been assisted by Joseph R. Morris of Chicago, representing the American Red Cross. The major's staff consists of five officers—three captains and two lieutenants. There are ten American Red Cross nurses, twelve sergeants, and twenty privates.

Thirty-four days after Mossley House was taken over, it was a fully equipped American hospital ready for its first patients. It has 150 beds, with room for expansion to 826 beds. The institution is equipped throughout on the American plan. This is especially true of the plumbing and electrical installations, all of which work was facilitated largely through the efforts of the British Royal Engineers. The hospital now has ten wards for soldiers, two small officers' wards, and an operating room, besides the administrative offices. It has, also, two ambulances of the latest type. About two hundred yards from the hospital are being built two isolation wards, each designed to accommodate one hundred contagious disease patients.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending May 25, 1918, the number of deaths reported was 215, against 213 last year, with a rate of 14.29, against 14.31 last year. There were 30 deaths under one year of age, against 25 last year.

The number of cases of principal reportable diseases were: diphtheria, 65; scarlet fever, 32; measles, 315; whooping cough, 59; typhoid fever, 5; tuberculosis, 71.

Included in the above were the following cases of non-residents: diphtheria, 19; scarlet fever, 4; measles, 4; whooping cough, 1; tuberculosis, 2.

Total deaths from these diseases were: diphtheria, 4; measles, 4; whooping cough, 2; typhoid fever, 1; tuberculosis, 21.

Included in the above were the following non-residents: diphtheria, 1; tuberculosis, 1.

Monson State Hospital.—The annual report of the Monson State Hospital has been submitted for the year 1917. The average number of patients treated has been 1031. In spite of the increased cost of all food products, the appropriation has not been exceeded; special appropriations are mentioned in the report. The training school has been affiliated with Bellevue Hospital. The hospital suffers from a lack of helpers; several members of the medical staff have left either to join the service or to enter private practice. Laboratory work has been curtailed because of the departure of the doctor in charge of it. The report contains, also, the treasurer's report and general information concerning admission and location. Statistical tables give detailed information about the hospital and patients.

Massachusetts Commission for the Blind.—The eleventh annual report of the Massachusetts Commission for the Blind has been submitted for the year 1917. The number of individuals registered during the year has amounted to 2007; special service has been rendered to 1046 These people have been assisted by the commission in various ways:—training has been given and expenses provided; regular employment for some and temporary work for others has been secured; home industry has been fostered by loans, equipment, use of canvassers and salesrooms; shop industry has been provided; information and advice about medical care, special education, occupations, and relief, have been given; many persons have been reported to other agencies; recreations, concerts, outings, and vacations have been provided. The report contains detailed information and statistics about sight-saving classes, employment in subsidized shops, financial and industrial matters.

Instruction for War Cripples in Massachusetts.—Massachusetts is proceeding to enact legislation to provide for training and instruction of her disabled soldiers and sailors without waiting for Congress to decide how to handle the national problem. Congress has not yet decided whether the Federal Government will handle all the work itself at its own expense, whether it will coöperate wholly or in part with the states, or whether it will authorize states so qualified to rehabilitate their own men and reimburse the states for the expense involved.

A bill now on its way through the Legislature would direct the State Board of Education to establish a division for the training and instruction of soldiers and sailors who are residents of the State at the time of their discharge. The division would consist of an executive head, appointed by the Board of Education, and an advisory board. The advisory board would consist of the commissioner of education, as chairman, the surgeon-general, the state health commissioner, the director of the bureau of statistics, the director of mental diseases, the chairman of the industrial accident board, the supervisor of administration, and nine others to be appointed by the Governor. An appropriation of $10,000 is provided to carry out the provisions of the bill for this year.

Another bill before the Legislature would authorize the Industrial Accident Board to establish a division for the training and instruction of persons crippled in industry, provided at the time of their incapacity they were residents of the state. The division would obtain for such persons instruction and employment, and would coöperate with the Federal Government and State Board of Education in establishing or maintaining courses of instruction in schools and institutions for disabled persons. A means of coöperation between this division and that for soldiers and sailors is thus provided.

Mr. Frank J. Donahue, of the Industrial Accident Board, said, in discussing the problem, that the first requirement is to restore the person injured to mental as well as physical health. In selecting employment, it is a case of selecting the right employment for about 90%, and of reëducating the others. Out of the 600,000 positions available in manufacturing industries in Massachusetts in normal times, Mr. Donahue has estimated that about 50,000 could be filled by persons disabled in some manner.

Appointment of Dr. Bryant.—Dr. Frederick Bryant of Worcester, Mass., received two appointments last month: one as roentgenologist to the Lynn Hospital, Lynn, Mass.; and another as consultant roentgenologist to the Milford Hospital at Milford, Mass. Dr. Bryant was graduated from the Harvard Medical School in 1900.

NEW ENGLAND NOTE.

Aroostook Hospital Site.—The site for the Aroostook County Antituberculosis Hospital, Presque Isle, Maine, has been accepted. Construction, for which $20,000 is available, will begin this year.

Miscellany.

PROGRAM FOR "THE CHILDREN'S YEAR" IN NEW YORK CITY

April 6, 1918, to April 6, 1919.

The Children's Year has been inaugurated by the Federal Children's Bureau and the Women's Committee of the Council of National Defense, in order to conserve the lives and health of the children of the United States as a measure of national defense.

Through the loss of so many thousands of young men as a result of the war, the countries of Europe have found that the protection of the lives of babies and children is a patriotic duty. Moreover, because of the increase in the number of women in industry, the mounting cost of food and other necessaries of life, and the other social and economic changes brought about by the war, most of the European countries have suffered an increase in the baby death rate and a deprivation of the health of the children. Finally, it must not be forgotten that in all the countries there has been a marked decline in the birth rate.

In this country the war has already shown similar results; thus in New York City the birth rate is much lower than it was last year, the baby death rate is higher and the increased proportion of children of pre-school and school age have been found to be suffering from undernourishment.

In the United States, according to the census of 1910, 300,000 children under the age of five years die annually. The Children's Bureau believes that at least 100,000 of these lives can be saved this year if the women of this country will consider this saving their contribution toward national defense. The number of lives to be saved has been apportioned among the various States. New York City's quota is 4700. The Mayor's Committee of Women on National Defense, Mrs. William Randolph Hearst, Chairman, has been designated by the State Council of Defense, as the official body to organize the campaign to save the lives of these 4700 children under five years of age in New York City this year.

The Committee on Health of the Mayor's Committee will be in immediate charge of the campaign. If New York City is to do its proper share in this important patriotic service, the aid of all organizations directly or indirectly concerned in child welfare is a vital necessity. Physicians, nurses, social workers, volunteer workers, and all organizations and agencies, including schools, settlements, neighborhood associations, day nurseries, baby health stations, health authorities, publicity and war service organizations must coöperate to the fullest extent.

The Chairman of the Committee on Health of the Mayor's Committee submits the following program for the organization and work of the Children's Year. It is tentative, and subject to suggestions and criticism and to any changes that will make it more effective.

OBJECT.

To save the lives of 4700 children under five years of age in New York City during the year beginning April 6, 1918.

PLAN.

1. *Prenatal Care.* To give every expectant mother the needed care and instruction to maintain her own health and the health of her baby. Forty per cent. of all babies that die under one year of age lose their lives from causes dependent upon the health of the mother before the birth of the child.

This can be done by:

(*a*) Maternity centers.
(*b*) Prenatal instruction by doctors, nurses, and the use of pamphlets.
(*c*) Maternity insurance.
(*d*) Proper care at childbirth.
(*e*) Aid in maintaining healthful living conditions.

INFANT CARE.

2. *Infant Care.* To provide every mother with the care and instruction that will keep her baby well.

This can be done by:

(*a*) Instruction centers in baby health stations, settlements, day nurseries, neighborhood associations, and other agencies.
(*b*) Home visiting by nurses and trained volunteer workers.
(*c*) Provision of milk for infant feeding at a reasonable price.
(*d*) Adjustment of home and living conditions.

3. *Pre-school Age.* To weigh, measure and examine every child of pre-school age (two to six years) and to provide the needed follow-up work to prevent illness and to correct physical defects.

This can be done by:

(*a*) Establishing centers for pre-school age children in dispensaries, schools, baby health stations, settlements, day nurseries, neighborhood associations and other organizations.
(*b*) Obtaining physicians to examine the children.
(*c*) Providing nurses and volunteer home workers to follow up these children in their homes and assure the necessary care.
(*d*) Adjustment of home and living conditions.

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VOCATIONAL REHABILITATION OF WAR CRIPPLES.

On April 8, 1918, Senator Hoke Smith, of Georgia, introduced into the United States Senate the following measure providing for the vocational rehabilitation of disabled soldiers and sailors. Previous comment on this important subject has been made in the editorial columns of the Journal. The bill (S. 4284), which has been referred to the Committee on Education and Labor, includes in its scope only men disabled in military or naval service, and not industrial cripples. Its text is, in part, as follows:

Section 1 constitutes the preamble and title of the bill.

Section 2. That every person who is disabled under circumstances entitling him, after discharge from the military or naval forces of the United States, to compensation under Article III of the Act entitled "An Act to authorize the establishment of a Bureau of War Risk Insurance in the Treasury Department," approved September 2, 1914, as amended, and who, in the opinion of the Federal Board for Vocational Education, is unable to resume the former occupation or to enter upon some other suitable or gainful occupation, or having resumed or entered upon such occupation is unable to continue the same successfully and may be vocationally rehabilitated, shall be ordered by the Bureau of War Risk Insurance to follow such course of vocational rehabilitation as the Federal Board for Vocational Education shall prescribe and provide, or when deemed advisable by said board shall be retained in the military or naval forces of the United States and be detailed to the control and direction of said board until the course of training prescribed has been satisfactorily completed.

The Bureau of War Risk Insurance shall have power, and it shall be its duty, to order the persons included in this section to follow suitable courses of vocational rehabilitation to be prescribed and provided by the Federal Board for Vocational Education, and every person so ordered to follow a course of vocational rehabilitation shall, while following the same, receive monthly compensation in a sum equal to the amount of his monthly pay for the last month of his active service, or to the amount to which he would be entitled under Article III of the said Act approved September 2, 1914, as amended, whichever amount is the greater, and if such person was an enlisted man at the time of his discharge he shall, for the period during which he is so ordered to follow a course of vocational rehabilitation, be subject to all the requirements and entitled to all the benefits of Article II of the said Act approved September 2, 1914, as amended, in the same manner as if he were an enlisted man, and for the purposes of the said Article II his monthly compensation shall be deemed to be his monthly pay: *Provided,* That if and while a person willfully fails to follow the prescribed course of vocational rehabilitation in a manner satisfactory to the Federal Board for Vocational Education the said board shall certify to that effect to the Bureau of War Risk Insurance and the said bureau may, in its discretion, withhold any part or all of the monthly compensation due such person and not subject to compulsory allotment.

The military and naval family allowance appropriation provided for in Section 18 of the the said Act approved September 2, 1914, as amended, shall be available for the payment of the family allowances provided by this section; and the military and naval compensation appropriation provided for in Section 19 of the said Act approved September 2, 1914, as amended, shall be available for the payment of the monthly compensation herein provided.

Section 3 provides that, so far as practicable, the rehabilitation courses shall be made available without cost for instruction.

Section 4 provides that the Federal Board for Vocational Education shall provide the necessary facilities, prescribe courses to be followed, and undertake the placement of rehabilitated men in suitable or gainful occupations.

Section 5 provides that all medical, surgical, or other treatment necessary to give functional and mental restoration to disabled men prior to their discharge from the Army and Navy, shall be under the War and Navy Department.

Section 6. That the Federal Board for Vocational Education is hereby authorized and empowered to receive such gifts and donations from either public or private sources as may be offered unconditionally. All moneys received as gifts or donations shall be paid into the Treasury of the United States and shall constitute a permanent appropriation to be called the "Special fund for vocational rehabilitation," to be used under the direction of the said board, in connection with the appropriations hereby made or hereafter to be made, to defray the expenses of providing and maintaining courses of vocational rehabilitation; and a full report of all gifts and donations offered and accepted and all disbursements therefrom shall be submitted annually to Congress.

Section 7. That there is hereby appropriated, out of any money in the Treasury of the United States not otherwise appropriated, to be used by the Federal Board for Vocational Education for erecting, renting, and remodeling buildings and quarters, repairing, maintaining, and equipping same, and for equipment and other facilities necessary for proper instruction of disabled persons, $250,000; for the preparation of instructors and salaries of instructors, supervisors, and other experts, including necessary traveling expenses, $545,000; for traveling expenses of disabled persons in connection with training and for lodging, subsistence, and other necessary expenses in special cases of persons following prescribed courses, $250,000; for tuition for persons pursuing courses in existing institutions, public or private, $545,000; for the placement and supervision after placement of vocationally rehabilitated persons, $45,000; for studies, investigations, reports, and preparation of special courses of instruction, $55,000; for miscellaneous contingencies, including special mechanical appliances necessary in special cases for disabled men, $110,000; for the administrative expenses of said board incident to performing the duties imposed by this Act, including salaries of such assistants, experts, clerks, and other employees in the District of Columbia or elsewhere, as the board may deem necessary, actual traveling and other necessary expenses incurred by the members of the board and by its employees under its orders, including attendance at meetings of educational associations and other organizations, rent and equipment of offices in the District of Columbia and elsewhere, purchase of books of reference, law books, and periodicals, stationery, typewriters and exchange thereof, miscellaneous supplies, postage on foreign mail, printing and binding to be done at the Government Printing Office, and all other necessary expenses, $200,000: *Provided,* That the said board shall file with the Clerk of the House and the Secretary of the Senate on July first and every three months thereafter, for the information of the

Congress, an itemized account of all expenditures made under this Act.

Section 8. That Section 304 of the Act entitled "An Act to authorize the establishment of a Bureau of War Risk Insurance in the Treasury Department," approved September 2, 1914, as amended, is hereby repealed.

Several organizations, which were concerned in the original draft of a measure to provide vocational rehabilitation for disabled sailors and soldiers, have suggested the following amendment, which would include within the benefits of the bill men disabled in industry. The text of the proposed amendment is, in part, as follows:

Section 8. That in order to provide for the promotion of the vocational rehabilitation of persons disabled in industry, or otherwise, and their return to civil employment there is hereby appropriated for the use of the States, subject to the provisions of this section, for the purpose of coöperating with them in paying the salaries of teachers, supervisors, and directors for the vocational rehabilitation of such disabled persons, and in training teachers, supervisors, and directors for such vocational rehabilitation for the fiscal year ending June 30, 1919, the sum of $500,000; for the fiscal year ending June 30, 1920, the sum of $750,000; for the fiscal year ending June 30, 1921, and annually thereafter, the sum of $1,000,000. Said sums shall be allotted to the States in the proportion which their urban population bears to the total urban population in the United States, not including outlying possessions, according to the last preceding United States Census; *Provided,* That the allotment of funds to any State shall not be less than a minimum of $5000 for any fiscal year, and there is hereby appropriated the following sums, or so much thereof as may be needed, which shall be used for the purpose of providing the minimum allotment to the States provided for in this Section, for the fiscal year ending June 30, 1919, the sum of $66,000; for the fiscal year ending June 30, 1920, the sum of $46,000, for the fiscal year ending June 30, 1921, and annually thereafter, the sum of $34,000.

Section 9. That in order to secure the benefits of the appropriations provided by this Section, any State shall, through the legislative authority thereof: (1) accept the provisions of this Section; (2) designate or create a State board having all necessary power to coöperate as herein provided with the Federal Board for Vocational Education in the administration of the provisions of this Section; (3) appoint as custodian for said appropriations its State Treasurer, who shall receive and provide for the proper custody and disbursement of all money paid to the State from said appropriations.

All moneys expended upon the provisions of this Section shall be upon the condition: (1) that for each dollar of Federal money expended the State shall expend an equal amount for the same purpose; (2) that the State Board shall annually submit to the Federal Board for approval plans showing the manner in which it is proposed that the appropriation shall be used, and shall make an annual report to the Federal Board on or before September 1 of each year on the work done in the State and on the receipts and expenditures of money under the provisions of this Section; (3) that no portion of any moneys appropriated by this Section for the benefit of the States shall be applied, directly or indirectly, to the purchase, preservation, erection, or repair of any building or buildings or equipment, or for the purchase or rental of lands, or for the support of any religious or privately owned or conducted school or college; (4) that all courses for vocational rehabilitation and all training of teachers, directors, and supervisors shall be given in schools or classes under public supervision or control.

Section 10 provides that the Federal Board for Vocational Education shall have power to coöperate with State Boards in carrying out the purposes and provisions of the Act.

Section 11. The Secretary of the Treasury, upon the certification of the Federal Board as provided in this Section, shall pay quarterly to the custodian of each State appointed as herein provided the moneys to which it is entitled under the provisions of this Section. The money so received by the custodian for any State shall be paid out on the requisition of the State Board as reimbursement for expenditures already incurred in such schools and classes as are approved by said State Board and are entitled to receive moneys under the provisions of this Section. The Federal Board for Vocational Education shall make an annual report to the Congress on or before December 1 on the administration of this Section, and shall include in such report the reports made by the State Boards on the administration of this Section by each State and the expenditure of the money allotted to each State.

Section 12. To be "Section 8" of the bill as introduced.

Hearings on the bill and its amendment were held in Washington on April 10 and May 1. The bill has been simultaneously introduced into the House of Representatives by the Hon. William J. Sears, to whom, or to Senator Smith, comments should be addressed.

◆

INFECTIOUS JAUNDICE IN THE UNITED STATES.

Public Health Report No. 19, Vol. 33, for May, 1918, discusses the problem of acute infectious jaundice in the United States. In presenting this paper, the writer desires to:

1. Emphasize the aspects of the disease which are of special interest to sanitarians in the United States.
2. Briefly outline the epidemiological problems of the disease.
3. Indicate the procedures for their study by laboratory methods.

In mentioning the prevalence of the disease among the troops in Europe, the author says:

"It is well known that outbreaks of jaundice have occurred at different times among the French, British, Italian, German, and Russian troops. The geographical range of prevalence has been from Belgium to Gallipoli. In most of the outbreaks the mortality has been low, but in some of the commands the attack rate has been high. At this time the weight of evidence indicates that the disease in the great majority, if not in all, instances, has been due to the *Spirochaeta icterohemorrhagiae* of Inada (1916) and his coworkers."

Spirochaeta icterohaemorrhagiae are prevalent also among the wild rats in the United States.

"Noguchi (1917) found that rats captured about New York City were infested with a spirochaeta identical in appearance with that causing acute spirochaetal jaundice in man. This worker, by means of cross immunity tests, presented further evidence that the parasites causing the human disease in Europe and Japan and those found in New York rats were the same. Jobling (1917) found that of more than a hundred rats captured in Nashville, Tenn., at least ten per cent. carried similar spirochætes in their kidneys. The writer has found a similar prevalence of the *Spirochaeta icterohaemorrhagiae* in wild rats captured in Washington, D. C. As far as can be made out, the organisms found by different workers in the United States correspond very closely in appearance and pathogenicity for guinea pigs with those infecting human beings in the trenches in Europe and in the mines of Japan. The evidence, then, seems to indicate pretty conclusively that the *Spirochaeta icterohaemorrhagiae*, the cause of acute spirochaetal jaundice in man, is rather widely disseminated among wild rats living under such different conditions of environment as obtain in New York, Washington, and Nashville. Reports of the degree of prevalence of these parasites in the rats throughout the country are awaited with considerable interest.

A search of the literature reveals a number of reports of outbreaks of jaundice among the civil population in the United States. In the majority of these reports no special prevalence of other febrile diseases is mentioned in connection with the cases reported. In many of the cases the observers were impressed with the fact that they were dealing with a condition they had never seen before, basing their diagnosis on the description of the disease as it occurs in Europe.

Whatever may be the weight attached to such facts as have been stated above, they indicate that epidemics of jaundice closely simulating those now known to be caused by the *Spirochaeta icterohaemorrhagiae* have occasionally appeared in this country, and that they were possibly due to this parasite. This latter statement is strengthened by the finding by A. M. Stimson (personal communication) of spirochaetes in sections of the kidney of a man who died in New Orleans of a disease characterized by jaundice and fever. These sections, prepared by Levaditi's method, show spirochaetes morphologically similar to the causative agent of acute spirochaetal jaundice."

The problem of the rat as a carrier of the *Spirochaeta icterohaemorrhagiae* is a serious one.

"English and French workers soon demonstrated the presence of the *Spirochaeta icterohaemorrhagiae* in rats taken from the trenches in which the disease had appeared among troops. Thus Stokes (1917) found 6 out of 15 rats to be infected. On the other hand, Courmont and Durand (1917) examined 50 rats taken in a region where acute infectious jaundice was unknown. The rats appeared perfectly healthy, but four of them were proved by guinea-pig inoculation to harbor the *Spirochaeta icterohaemorrhagiae.* These figures approximate the rate of incidence later obtained for wild rats in the United States. Rat infestation has been demonstrated in other portions of France.

While the problem of the rat in relation to acute infectious jaundice has not been completely worked out, the following statement of the mode of transfer forms a reasonable hypothesis. About ten per cent. of all wild rats, wherever located, probably carry the *Spirochaeta icterohaemorrhagiae* in their kidneys and excrete them in their urine. If this organism finds a favorable environment in the soil, a sufficient number may live long enough to infect a human being who gets them in the mouth or on the skin. Under these conditions a larger number of rats also take up the spirochaetes.

Much more work needs to be done to place the whole matter on a sound scientific basis, and to do this it is essential to: (1) recognize cases of the disease in man, (2) determine the general prevalence of the *Spirochaeta icterohaemorrhagiae* in wild rats, living in various environments."

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR APRIL, 1918.

GENERAL PREVALENCE.

There were 4752 cases of communicable diseases reported in April, an increase of 1990 cases over the March total, which was 12,762, and 6121 cases more than the April, 1917, total of 8631 cases.

The increase in cases is largely confined to lobar pneumonia, measles, German measles and whooping cough.

Anthrax.—The single case of anthrax reported for the month occurred in a hide handler in a leather factory in Haverhill.

Epidemic Cerebrospinal Meningitis.—There were 67 cases of cerebrospinal meningitis reported from 24 communities in the State. This disease is becoming more prevalent throughout the State, and it is important that each physician have a spinal fluid examination made for each case, in order that his diagnosis may be confirmed by laboratory examination.

Septic Sore Throat.—This disease showed an increase of 6 cases over the preceding month. Nine of the 19 cases occurred in the town of Holliston.

Smallpox.—Two cases of smallpox were reported for April. The first case was in an inmate of the Tewksbury State Infirmary, and the source of infection was a previous case at the Infirmary. The patient was never successfully vaccinated. The second case occurred in a woman who cleaned offices in public buildings. The patient was never successfully vaccinated, and the source of infection was not ascertained.

Typhoid Carrier.—A typhoid carrier was discovered during the month in a maid employed in a private family. The carrier gave a history of having had typhoid fever 20 years ago, and a specimen of feces proved positive. The carrier was responsible for one case of typhoid fever in the family in which she was employed.

Diseases on the Premises of Milk Handlers.—There were 6 cases of scarlet fever and 1 case of diphtheria on milk-producing farms during the month. All of the cases were carefully isolated by the local boards of health, and the infection was not spread to the consumers except in one instance, when the disease was not recognized until two persons employed in the handling of the milk were found to be desquamating.

OUTBREAKS AND EPIDEMICS.

Diphtheria.—In Malden, 22 cases of diphtheria were reported. The cases were mostly scattered throughout the city. During the course of investigation, in one instance 4 cases were discovered in one family by contact culturing, and in another instance, 5 cases were discovered by culturing the throats of the contacts.

Measles.—There were 174 cases of measles reported from Lawrence. The epidemic started in one of the schools among the pupils of the lower grades, but now the disease is well scattered all over the city.

In Chelmsford, there were 102 cases reported. The outbreak started by a family being exposed to an unrecognized case that was visiting them.

Scarlet Fever.—In Adams, 14 cases of scarlet fever were reported. Five of the cases attended the Notre Dame School, and 3 cases were also reported from one family.

A distinct outbreak of 97 cases of scarlet fever occurred in Holliston. Investigation established the fact that the cases were not of school age and that they were mostly on the route of one milk dealer. The premises of this milk dealer were visited, and two persons who handled the milk were found to be desquamating. These cases were immediately isolated, all the milk was pasteurized and all utensils used in handling the milk were sterilized. Following this action, the number of cases immediately began to decrease. In less than one week the outbreak was checked, and no more cases were reported.

RARE DISEASES.

Anterior Poliomyelitis was reported from Boston, 1; Cambridge, 1; Lowell, 1; Medford, 1; Methuen, 1; and Springfield, 1.

Anthrax was reported from Haverhill, 1.

Dog-bite was reported from Charlton, 1; and Lowell, 2.

Epidemic Cerebrospinal Meningitis was reported from Boston, 21; Cambridge, 7; Camp Devens, 3; Chelmsford, 1; Chelsea, 2; Concord, 1; Fall River, 2; Holyoke, 1; Lawrence, 2; Leominster, 1; Lowell, 3; Malden, 1; Mansfield, 1; Milton, 1; New Bedford, 1; Northbridge, 1; Pittsfield, 2; Revere, 2; South Hadley, 1; Sutton, 1; Waltham, 1; Weymouth, 1; Winthrop, 1; and Worcester, 9.

Malaria was reported from Boston, 1; Dedham, 2; Lynn, 1; and Newton, 1.

Pellagra was reported from Cambridge, 1; and Northampton, 1.

Septic Sore Throat was reported from Boston, 2; Fall River, 1; Haverhill, 1; Holliston, 9; Lenox, 1; Leominster, 2; Lowell, 1; Melrose, 1; and Watertown, 1.

Smallpox was reported from Chelsea, 1; and Tewksbury State Infirmary, 1.

Tetanus was reported from Concord, 1.

Trachoma was reported from Boston, 7; Cambridge, 1; Lowell, 1; and Plymouth, 1.

AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION PROGRAM.

SESSIONS will be held in the Boston Medical Library.

Wednesday, June 5, 10 a.m.

"The Larger Controls of the Climates of the United States." Prof. R. DeCourcey Ward, Harvard University.

"Experimental Vegetative Endocarditis," Dr. Cleaveland Floyd, Boston.

"The Foramen Ovale in Connection with Certain Cardiac Murmurs." Dr. W. F. R. Phillips, Charleston, S. C.

Nearly all text-books on cardiac disease speak of the foramen ovale as being patent only in fetal and early infant life. Few, if any, refer to it as a probable cause of some of the murmurs without other evidences of cardiac disease; but anatomists have called attention all along to the fact that the foramen is frequently patent through life.

"Fatigue," Dr. Thomas Darlington, New York.

"Rhythmical Breathing." Dr. I. H. Hance, Lakewood, N. J.

Rhythmical breathing implies that there exists a voluntary control and use of the diaphragm. Continuous muscular movement conserves energy and increases efficiency when performed rhythmically with breathing. Few are instructed in proper breathing, whereas general muscular development is sought by everybody. Breathing exercises influence beneficially the functioning of all organs; concentrate the individual's mind upon the performance of the act and facilitate his powers of concentration; produce general muscular relaxation, relieving thereby nerve tension. Detailed description of method. Few remarks of its effect on the spasms of asthma.

Wednesday Afternoon, June 5.

"Anti-Typhoid Inoculations in the Canadian Forces." Captain George D. Porter, A.M.C., Toronto, Canada.

Importance of inoculation now recognized by the authorities, who make it compulsory. Practical immunity from this disease at home and at the front since inoculation has been made compulsory. Both typhoid and para-typhoid inoculations used. Technic employed, with dose and frequency. Immediate results very good; little inconvenience and but very few severe reactions.

"Five Years' Experience with Artificial Pneumothorax." Capt. C. D. Parfitt, A.M.C., Gravenhurst, Canada.

"A Study of Fifty Cases of Tuberculosis, Mostly of the Glands and Joints, Treated with Tuberculin, Compared with an Equal Number Treated Without It." Dr. Richard Cole Newton, Montclair, N. J., and Dr. Sidney A. Twinch, of Newark, N. J. (by invitation).

(1) A comparison of the course and behaviour of the disease in the two classes of patients.

(2) Duration and results of the two forms of treatment so far as ascertainable.

(3) What conclusions, if any, are fairly deducible from the data presented?

"Granular Tuberculous Conjunctivitis Treated by Instillations of Tuberculin." Dr. R. C. Paterson, Saranac Lake, N. Y.

Case report. Discussion of the action of tuberculin in causing focal reactions; the beneficial effect of these reactions exemplified by the case reported.

"Comparative Results Obtained in the Treatment of Pulmonary Tuberculosis by (1) Graduated Labor, (2) Bed Rest Treatment, (3) Rest and Exercise Treatment." Dr. H. M. Kinghorn, Saranac Lake, N. Y.

Thursday Morning, June 6.

President's Address.

"Late Results of Gunshot Wounds of the Chest." Capt. J. H. Elliott, A.M.C., Toronto, Canada.

"Cardiac Conditions That Disqualify for Army Service." Dr. Collins H. Johnston, Grand Rapids, Mich.

Discussion by Dr. A. K. Stone, Boston.

"The Soldier and Tuberculosis," Dr. Edward O. Otis.

"What Shall be Done with Tuberculous Soldiers?" Dr. Jay Perkins, Providence, R. I.

(*a*) Discovered in draft, (*b*) in the cantonments, (*c*) overseas.

Discussion by Dr. A. K. Stone.

"Literature on the Climatology of the United States." Prof. R. DeCourcy Ward, Harvard University.

(To be read by title.)

Paper by Dr. F. M. Pottenger, Monrovia, Calif.

MEMORIAL NOTICES.

Fleming Mant Sandwith, C.M.G., M.D., F.R.C.P

Boardman Reed, M.D.

Samuel G. Dixon, M.D., LL.D., Sc.D.

Thomas J. Mays, M.D.

Herbert Maxon King, M.D.

Norman Hay Forbes, F.R.C.S.

E. Fletcher Ingals, M.D.

Correspondence.

STANDARDIZATION OF MEDICAL PUBLICATIONS.

Madison, Wisconsin, May 23, 1918.

Mr. Editor:—

Publishers of medical literature would be wise to imitate, in part, the methods of the commercial houses which vie with each other in getting out attractive preparations and convenient packages for their goods. In selling medical literature to "the trade," which in this case is made up of physicians and surgeons all over the country, it needs no stretching of the imagination to see that a convenient and attractive form would be an equally important asset. Nothing could be a greater inducement toward the collecting of medical literature by subjects and the preserving of them in uniform bindings than the standardizing of all medical publications both as to size and type.

In these days of rush and hurry and with the prospect of actual shortage of physicians which the continuation of the war will almost surely bring about, it will be increasingly difficult, if not impossible, for physicians to leave their practice for post-graduate study. And yet, never in the history of medicine has the need for such study been greater. Every physician needs today to increase his efficiency to the highest point. Medical progress will not only not halt until the close of the war, but will double its pace. How is the ordinary overworked physician to keep up with it? Clearly, the easiest and most accessible method will be in reading the current medical magazines and keeping special articles for reference. And it is here that the publishers can furnish valuable help to their readers. The filing of reprints would become a matter of pride if they came in uniform sizes and could be bound by subject instead of being thrown loosely into filing cabinets and cross referenced. Every year would see the addition to a man's library of several neat volumes representing all the best work in the different lines of medical practice accomplished during the year. A man could then review a subject with ease and it would be of immensely greater profit to him to take up the volume and study it carefully than is the method of today of skipping through the journals each month and trying to cull a little bit of knowledge on a lot of different subjects. The way to learn is to get saturated with a subject and stay with it for a few weeks. The superficial hit and miss type of perusal of medical literature too easily becomes like the daily paper habit. A man forgets how to study and prostitutes his own memory and intelligence.

It ought also to be possible for the different publishing houses to coöperate in the collection of literature and bind together literature on related subjects and offer them at special rates to subscribers and non-subscribers. This would seem highly feasible, since there would be a complete saving of additional typesetting. An "interallied" council of editors could agree on the contents of each volume and, perhaps, add some useful and valuable editorial matter.

H. P. Greeley.

[Note.—The Journal adopted, in 1915, the standard library size of reprints. Standardization of type is less easy to secure than of size, owing to local differences of taste, style and convenience. It is also less important, though obviously desirable.—*Editor.*]

A CORRECTION.

Boston, May 21, 1918.

Mr. Editor:—

The Boston X-ray Laboratories have recently circulated among the medical profession of Boston an announcement containing a statement regarding their personnel which seems to me to be misleading.

They state that Dr. M. N. Tennis, who is in charge of the work for them, was assistant to Dr. Dodd at the Massachusetts General Hospital for eight years. Also, that Mr. Lunan, one of their staff, was also assistant to Dr. Dodd and myself at this hospital for four years.

The term "assistant" would imply that they acted as assistant roentgenologists and did work which can be done only by trained physicians. As a matter of fact, both of these men while here did purely technical work. They had nothing whatever to do with the diagnosis or interpretation of the x-ray findings.

Therefore, if seems only fair to the medical profession and to the Massachusetts General Hospital to correct the statement regarding their work in this institution.

Very truly yours,
George W. Holmes.

RECENT DEATHS.

Benjamin Dodds Gifford, M.D., died at Chatham, May 16, 1918, aged 72 years.

Charles Reed Whitcomb, M.D., died at Roslindale, March 9, 1918, aged 64 years.

Seabury Warren Bowen, M.D., a retired Fellow of the Massachusetts Medical Society, died at his home in Fall River, March 2, 1918, at the age of 77

Henry Edward Goddard, M.D., died at the Goddard Hospital, Brockton, of pneumonia, May 12, 1918. Dr. Goddard was born in Brockton May 20, 1852, the son of Rev. Warren Goddard. He graduated, A.B., from Brown in 1875, and from the U. C. Theological Seminary the following year, becoming pastor of the society of the New Jerusalem Church in Brockton and filling the position until 1894. Then he turned his attention to medicine and graduated at the Dartmouth Medical School in 1897, settling in his native city, joining the Massachusetts Medical Society in 1898, and soon founding, in 1902, the Goddard Hospital, a private surgical and obstetrical institution. He is survived by three children, one of them being Dr. Samuel W. Goddard of Brockton.

Stephen William Driver, M.D., died at his home in Cambridge, May 21, 1918, aged 85 years.

Dr. Driver was born in Sharon, April 17, 1833. He was the son of Rev. Joseph M. Driver, a Baptist clergyman, whose family came from Salem. He prepared for college at Phillips Andover, and, entering Harvard, was graduated in the class of '60, of which he was the secretary for more than twenty years, a period of service that was fittingly recognized by his classmates on the fiftieth anniversary of their graduation, when Dr. Driver was presented with a silver bowl and a purse of money.

Following his graduation, he entered the Harvard Medical School, graduating in 1863 after his return from the war. He enlisted for Civil War service and was stationed for a year at Ship Island, in the Gulf of Mexico, as a surgeon.

Dr. Driver then returned North and began his practice, occupying his Brattle street residence, which was built in 1737, and in which, with its surrounding garden, the doctor took great delight. He had been president of the Middlesex South District Medical Society and of the Cambridge Society for Medical Improvement. He was a member of the American Medical Association and of the Massachusetts Medical Society, and was upon the original staff of the Cambridge Hospital, serving for many years.

Dr. Driver's wife, who died three years ago, was Martha Hamilton Fitz Clarence of Cambridge, and his only survivor is a daughter, Miss Martha Elizabeth Driver.

SOCIETY NOTICE.

National Tuberculosis Association.—Several changes have been made in the program of the fourteenth annual meeting of the National Tuberculosis Association, to be held in Boston, June 6 to 8.

The dinner meeting of the American Sanatorium Association, announced for Thursday, will be omitted. A short business session will be held at 5 p.m., Friday, June 7th.

The program of the Advisory Council meeting on Thursday evening will be as follows: "How America is Helping France with its Tuberculosis Problem," James Alexander Miller, M.D., New York; "How the United States is Meeting the Tuberculosis War Problem," Col. George E. Bushnell, U.S.A.; "How Canada is Meeting the Tuberculosis War Problem," Capt. Jabez H. Elliott, Canadian Military Hospital Commission, Toronto, Canada.

In accordance with Article X of the By-Laws of the National Association for the Study and Prevention of Tuberculosis, all of the various agencies engaged in anti-tuberculosis work throughout the country are invited to attend the annual meeting of the National Association and to participate especially in the meeting of the Advisory Council to be held on the evening of June 6th. There is no fee for membership in the Advisory Council, and organizations may send one or more representatives to represent them at this and other meetings of the National Association.

The program of the Clinical Session will be divided as follows:

Friday morning session: Drs. Rutledge, Philip King Brown, Lloyd, Floyd, Sampson, Hawes and Elliott. Friday afternoon session: Drs. Krause, Bowditch, Kinghorn, Lawrason Brown, Pratt and Landis. Saturday morning session: Drs. Slater, Dworetzky, Mills and D. MacDougall King. The subject of the paper by Dr. Joseph H. Pratt will be "Tuberculosis as an Army Problem," and Dr. Lawrason Brown will collaborate in this paper. Dr. Bowditch has changed the title of his paper to "Methuselah and Life in the Open." The title of Dr. Dworetzky's paper has also been changed to "The Institutional Care of Laryngo-Pulmonary Tuberculosis." The title of the paper by Dr. H. R. M. Landis has been changed to "Diabetes Complicated with Tuberculosis, Treated by Means of the Allen Method," and Dr. Elmer H. Funk and Charles M. Montgomery of Philadelphia will collaborate in the paper. The paper by Dr. King is additional to those mentioned in the April bulletin of the Association. His subject will be the "Recording of Physical Findings in Chest Examinations."

Dr. James B. Murphy, Rockefeller Institute for Medical Research, New York, has been added to the list of speakers at the meeting of the Pathological Section on Friday.

Miss Mary S. Gardner, R.N., Director of the Town and Country Nursing Service of the American Red Cross and Superintendent of the Providence District Nursing Association, will preside at the luncheon meeting for public health nurses on Friday. Miss Bernice Billings, R.N., of the Massachusetts State Board of Health, will discuss "Some Tuberculosis Problems of the Rural Public Health Nurse," and Miss Margaret Stack, R.N., Visiting Nurse Association, New Haven, will speak on "Some Tuberculosis Problems of the City Public Health Nurse," after which there will be an open discussion. All nurses interested in this subject are invited to attend. The luncheon will be held at Westminster Hotel, price $1.00 per plate.

In place of the meeting and outing of the National Conference of Tuberculosis Secretaries, scheduled to begin at 12.30 p.m., on Saturday, the secretaries and all others interested will hold a dinner meeting at 6.30 p.m., on Friday, at the Westminster Hotel. Stunts will be provided by Eastern, Western and Southern groups.

The mass meeting, under the auspices of the local committee on arrangements, will begin at 8.15 on Friday evening, instead of at 8.00 o'clock.

The program will be as follows: Address by Hon. Samuel W. McCall, Governor of Massachusetts; "The Work in Tuberculosis of the Department of Health," Eugene R. Kelley, M.D., Commissioner of Health; "The State Sanatoria," Arthur K. Stone, M.D., Chairman of the Trustees of Hospitals for Consumptives; "The Municipal Hospitals of Massachusetts," John F. O'Brien, M.D., Chairman of the Trustees, Boston Consumptives' Hospital; "Tuberculosis Work in the State at Large," Vincent Y. Bowditch, M.D., President, Massachusetts Anti-Tuberculosis League.

The session of the Sociological Section, scheduled for 9.00 a.m., on Saturday, will close at 11.00 o'clock, and a special session on the Framingham Community Demonstration will be added. Three papers will be given at this session, as follows: "The Framingham Health Program: The First Year's Results," Donald B. Armstrong, M.D., Executive Officer; "The Framingham Consultation and Medical Examination Work," P. C. Bartlett, M.D., Chief Medical Examiner; "The Framingham Educational and Organization Activities," Miss Mary A. Abel, Educational Assistant.

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ARMY TUBERCULOSIS EXAMINATIONS.

BY HORACE GRAY, M.D., BOSTON,

First Lieutenant, M.R.C.

WHOLESALE examination of more than 20,000 men in various parts of a large cantonment needs the coöperation of so many persons who, unfortunately, have to be interrupted from their regular and different work, that memoranda of the many small things to be done seem conducive to speed and uniform results, even though at first glance they appear unduly fussy. Some of the following details are quoted from three articles,* out of the many recent ones, while most are compiled from the somewhat varying methods used by members of the Special Tuberculosis Board which was busy from November, 1917-January, 1918, examining the command at Camp Devens. The first form is not a literal copy of the official memorandum actually issued, but is a revised model which might be suggested on the basis of experiences during the work. Some of the following memoranda will, no doubt, need considerable revision to conform to official instructions issued between the time of meeting and appearing in print.

MEMORANDUM I.

Division Surgeon's Office,
Headquarters 76th Div., N.A.C.,
Camp Devens, Mass., Jan. 3, 1918.

To all Unit Commanders:

1. The following instructions relative to tuberculosis examinations, to be conducted simultaneously in different parts of the cantonment by five (5) Tuberculosis Boards, are published for the guidance of all concerned.

2. Beginning Monday, Jan. 7, 1918, the commanding officers of the 301st, 302d and 303d F.A., and 301st and 302d Inf. will have their men in quarters at the following rate: about 40 men at 8 a.m., 40 at 9, and 40 at 10; and again at 1, 2 and 5 p.m.; daily except Saturday afternoons, Sundays and official holidays.

3. Companies will be detailed consecutively, not simultaneously.

4. Quarantined companies will be examined like the rest.

5. A nominal list (roster) of all officers on each staff, arranged by rank; of each regiment, arranged by rank; and of enlisted men in each

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* Francine, A. P., Price, J. W., and Trudeau, E. B.: Jour. A. M. A., Dec. 22, 1917, p. 2110.
Downing, A. F.: BOSTON MEDICAL AND SURGICAL JOURNAL, Feb. 7, 1918, p. 177.
Cronin, M. J.: BOSTON MEDICAL AND SURGICAL JOURNAL, Feb. 7, 1918, p. 187. This writer seems to interpret systolic heart murmurs more by insurance statistics than by S. G. O. Circular 21.

company will be furnished by that unit to the Board. Each list will be typewritten, in strict accordance with the detailed directions and samples furnished herewith.

6. Before examination each officer or soldier will fill in and sign a history blank. These blanks will be prepared by manifold in this office, from which they may be obtained by the regimental adjutant.

7. Quiet is essential to satisfactory examination, therefore:

(*a*) The place will be the quietest available, usually upstairs in quarters.

(*b*) At least two non-commissioned officers will be in attendance from 8 a.m. to 1.30 p.m. and from 1 to 4.30 p.m. to see that men walk quietly on the stairs and make no other noise in the neighborhood.

8. The service records will be brought to the examining room, in order that as each man is passed his record may be stamped: "Examined for tuberculosis and passed."

By Command of Brigadier General ——.
—— Major F.A., N.A., Adjutant.

MEMORANDUM II.

To the Members of the Tuberculosis Board:

1. The Tuberculosis Board will consist of the president (usually a major) and of five (5) local boards (usually called Board 1, Board 2, Board 3, Board 4 and Board 5).

2. Each Local Board will consist of three (3) medical officers (usually one captain and two lieutenants), of whom one (usually the captain) shall be appointed president of the Local Board by the president of the whole board.

3. To assist each Local Board the Division Surgeon will appoint a sergeant and three (3) men of the Hospital Corps, of whom one shall be competent to typewrite the necessary reports.

4. All members of the Board shall

(*a*) Familiarize themselves with the Board president's typewritten orders from the S.G.O.

(*b*) Familiarize themselves with Circular 20 (Lungs) and preferably also Col. Bushnell's article in the *Medical Record* or *Military Surgeon* for June, 1917), and also Circular 21 (Hearts).

(*c*) Familiarize themselves with the other memoranda herewith, viz.: Memorandum to C.O., Memorandum to Company Clerks, Memorandum to Sergeant Hospital Corps, Memorandum to Men Being Examined.

(*d*) Discuss within the first few days of the work the nomenclature to which they have been accustomed to use in recording their findings, and agree so far as practicable on uniform terms.

(*e*) The following abbreviations are suggested: right, (R.); left, (L.); apex, (A.); upper lobe, (U.L.); middle lobe, (M.L.); lower lobe, (L.L.); breath sounds, B.S.); broncho-vesicular breathing, (B.V.B.); bronchial breathing, (B.B.).

(*f*) *Not* notify the men examined of any abnormality which may be found; too often this results only in making the man neurotic and a plague to the regimental surgeon.

(*g*) "Six hours a day is a full day for this work if done as a routine. Each examiner should examine not less than sixty (60) nor more than seventy-five (75) new men a day. While the foregoing does not seem numerically a great deal or the hours very long, yet when one does it continuously day in and day out, and with attentiveness, it makes a very adequate and even exacting working day." (Price *et al.*)

(*h*) Either wear a gauze mask or take particular pains to avert the face. Six members of this Board were put to bed each for from three to seven days by throat infections. Weaver reports marked results from "masks of a double thickness of gauze, so shaped as to fit closely over the face from the chin well up over the nose, and held in place by two tapes tied behind the head."

(*i*) "Avoid sore ears by not continually pulling out and readjusting your ear pieces." (Downing.)

5. Each local president shall, in addition:

(*a*) See that the adjutant of each regiment is provided on the day before examination with the four memoranda, each in sufficient quantity.

(*b*) See that the rosters turned in by each regiment have been correctly made, and if not return them for rewriting.

(*c*) Instruct the Hospital Corps men in their duties, including history-taking.

(*d*) Record daily on the blank prepared by the president of the whole Tuberculosis Board—

(I) The number of examinations done on that date by his Local Board.

(II) The total number of examinations up to date.

6. The report from the tuberculosis specialist in the cantonment to the president of the Tuberculosis Board will be a carbon copy of Form A, so fast as he prepares it for the S.G.O. When this form reaches the president of the Board he shall call a meeting of the local presidents with their rosters and furnish them with the diagnosis and disposition of each man who has been referred to the specialist. When the disposition of a man has been "Duty," the local president will simply put a check before his name on the roster as if he had never been held up. If the disposition has been "S. C. D." those initials will be marked before the man's name.

7. After all cases have been accounted for from Form A, each local president will have typewritten the following lists:

(*a*) On each roster, page 1, typewrite the names of the absentees.

(*b*) On each roster, last page, type the summary and figures.

(*c*) Make a list of S.C.D.'s by regiments in triplicate.

(*d*) Make an aggregate absentee sheet in triplicate.

(*e*) Make an aggregate summary sheet in triplicate, Form B.

MEMORANDUM III.

To Company Clerks:

Nominal List for T.B. Board.

This roster is required by the War Department, Surgeon-General's Office, to be uniform for the different organizations throughout the division, as follows:

1. Size of paper to be the same as this: 8 x 10½ inches.

2. Grade of paper to be the same as this; letter paper, not onion skin or mimeograph paper.

3. Triplicate.

4. Headings (address, date, company, rank, name, etc.) to be like accompanying specimen.

5. Type (capitals, small letters, underlining, etc.) to be like accompanying specimen.

6. Spacing to be like specimen. Use of dividers is advised.

7. Surnames to be put first, among officers as well as men; and followed by one name in full (*e.g.*, Smith, John W.—*not* J. W. Smith).

8. Officers of the entire regiment or corps, whether headquarters staff, company, or attached, are to be put on a single list, arranged in dictionary order under each rank.

9. Enlisted men to be in same order as their service records in their Company Orderly Room, either alphabetically under each rank, or in one alphabetical list with rank after the name.

10. Absentees to be included—*not* grouped separately.

11. Names *not* to be numbered.

12. Pages are to be numbered, at bottom in the middle; including page (1).

13. On each subsequent page repeat the heading, like page (2) of specimen.

14. On last page, right lower corner, put T.B. summary, as per page (3) of specimen.

15. The company clerk, or whoever typewrites this roster, will initial these directions, clip them together with the specimen and the triplicate, and have them at the headquarters of the Tuberculosis Board before noon on the day prior to examination.

16. The company clerk will, on the day of examination, make out a list of absentees for the company commander.

SPECIMEN NOMINAL LIST, MEN.

Roster of Battery C, ——Field Artillery, Camp ——, Mass., Jan. 3, 1918.

Names,
SERGEANT,
Cedar, William E.
Chisholm, Ralph
etc., in dictionary order.
CORPORAL,
all alphabetically.
PRIVATES,
all alphabetically.

This summary to go only on the last page of the roster of the enlisted men of the company:

Total number men examined ....
Total number T. B. ....
Percentage T.B. ....
Signed ....
M.R.C.

SPECIMEN NOMINAL LIST, OFFICERS.

Roster of Officers, ——Field Artillery, Camp ——, Mass., Jan. 3, 1918.

Names,
Colonel,
Doe, John
Lt.-Colonel,
Brown, William
Major,
Black, Thomas N.
Rowe, Robert
White, Richard S.
Captain,
all in regiment, alphabetically.
1st Lieutenant,
all in regiment, alphabetically.
2d Lieutenant,
all in regiment, alphabetically.
Total number officers examined ......
Total number T.B. ....
Percentage T.B. ....
Signed ....
M.R.C.

MEMORANDUM IV.

To the Sergeant Hospital Corps:

1. Each examiner should have one enlisted man of the Hospital Corps in attendance.
2. Each man to be examined to be given a pencil and a history blank.
3. See that he is assisted in filling it out.
4. Tell him to read Memorandum V.
5. Keep each examiner supplied constantly with one man for examination and two more watching close by.
6. If the examiner finds both heart and lungs normal he will mark the history blank "O.K.," put his initials on it, and send the man out. The sergeant will take up the history sheet, stamp it and the service record (at paragraph 11, page 5), and put a check before the man's name on the roster.
7. If, however, the examiner finds any abnormalities in heart or lungs he will note his findings on the history sheet and pass it to the H.C. man in attendance. He will take care that this is not examined by the soldier, but will present it and the man for examination to the president of the Local Board. If he thinks necessary, he will consult the third member of the Board. The examinee will then be either (*a*) O. K.'d, or (*b*) instructed to report to the Board for re-examination, on a specified date, at some central point, usually the regimental infirmary. In this case the hospital sergeant will put nothing before the man's name on the roster and after it will write "Re-ex. + the date," and he will keep this history sheet in a separate clip; or (*c*) instructed to report to the regimental surgeon the following morning at 8 a.m. In this case the hospital sergeant will put nothing before the man's name on the roster and after it will write, "Base T.B." He will keep the history blank and physical findings and put this paper in an envelope addressed Major X. Y. Smith ——, Tuberculosis Specialist, Base Hospital, Camp Devens, Mass., through Regimental Surgeon, —— Inf. At the end of the day he will deliver this envelope to the Regimental Surgeon.

MEMORANDUM V.

To Those Being Examined:

1. Strip off all clothes above the waist.
2. Step up close to the doctor; stand at ease, with muscles relaxed.
3. Put left hand on hip.
4. Turn head to the right.
5. Hold handkerchief with right hand to your mouth so that you will not breathe in his face.
6. Breathe entirely through your mouth.
7. Breathe way out; cough (only a small cough; only one cough; only *after* breathing *out*).
8. Change hands; breathe out; cough.
9. Left about, face; breathe out; cough.
10. Step aside for the next man. Meanwhile hop 100 times on your left foot and then return to the doctor.

SPECIMEN HISTORY BLANK.

Name (print, with last name first):

....

Organization:
Btry. ........F.A. ....Eng. ....
Co. ....Inf. ....Dep. Bg. .....
Troop ....Cav. ....etc. ....
Home address ....
Previous occupation ....
Date of arrival at Camp Devens ....

F. H. Have any of your near relatives had consumption? If so, state relationship and whether death or recovery occurred. By near relatives is meant parents, brothers and sisters, or wife.

P. H. Have you ever had pleurisy with fever? If so, give year if possible. The chief symptom of pleurisy is sharp pain in the chest, increased by breathing and lasting days or weeks.

Have you ever coughed up blood or blood-streaked sputum. If so, when?

Have you ever had a cough lasting a month or more? When?

Have you had a recent cold with cough?

Have you ever had night sweats? If so, when?

Had you lost or gained as much as 5 lbs. weight during the six months *before* coming to Camp? If so, how many pounds?

How much weight have you lost or gained *since* coming to camp?

Have you lost or gained strength since coming to Camp?

Have you ever had rheumatic fever or St. Vitus dance? When?

Are you short of breath on slight exertion, such as walking upstairs?

Signed ....

SPECIMEN DAILY REPORT.

Camp Devens, Mass.,
——1918.

From: ———, President Local Tuberculosis Board No. 2, examining at barracks of B Company, 301st Infantry.

To: ——, $\left\{\begin{array}{l}\text{Tuberculosis}\\ \text{Cardiovascular}\end{array}\right\}$ Specialist, Base Hospital, Camp Devens, Mass.

Through the Regimental Surgeon.

Subject: Examination of chest.

1. The following abnormalities found today are referred for study:

Name (surname first) ....
Organization ....
Findings ....

Lt. M.R.C.

(Plenty of these forms may be mimeographed before the work begins, then each day a triplicate will be filled in by the Local Board:

1. Original, with histories pinned on, to reg. surg. for transmission to base.

2. A carbon, with histories pinned on, to president whole T.B. Board.

3. A carbon, with histories pinned on, for president Local T.B. Board to keep.)

A STUDY OF THE PHYSICAL CONDITION OF ONE THOUSAND DELINQUENTS SEEN IN COURT.

By V. V. Anderson, M.D., M.A.,
Medical Director, Municipal Court of Boston;

AND

Christine M. Leonard, M.D.,
Assistant Medical Director, Municipal Court of Boston.

The original purpose of this study was to determine what part—if any—routine physical examinations might play in the disposition of a delinquent's case in court, and later in the institution of reconstructive measures while on probation. Such a consideration seemed clearly worth while, particularly in view of an ever-widening scope of interest manifested by the court in the needs, as well as the deeds, of the individual delinquent.

The old and archaic conception of the judicial function as one limited purely to the determination of guilt or innocence; and in case of guilt, the imposition of fines and sentences, has fortunately disappeared along with other equally archaic and fruitless theories. In its stead we have come to realize that the essential problem facing the court in connection with any individual who has offended against the law and order of society is the problem of readjusting that person to society.

It needs little argument to show that in order for the court to attain an adequate readjustment of any delinquent it must take into consideration all the facts in the case; it must take into consideration the individual and his needs, and deal understandingly with the offender, as well as legally with his offense.

In the accomplishment of this function the court may employ certain tools—most important of which are probation and penal treatment.

In probation it possesses an agency of far-reaching usefulness in this direction, whose capacity for effective service in readjusting human individuals, in restoring delinquents to the community, safe and free and capable of taking their part in the complex demands of social life is scarcely realized; and yet the keenness, the sharpness and the efficiency of this tool can be dulled and impaired by improper use. For, with the opportunity to rehabilitate and readjust himself while on probation, there should go in the case of every delinquent an intelligent understanding of what is required to accomplish this rehabilitation.

The vital importance of the physical condition in this connection, particularly in relation to his economic efficiency, his ability to support himself, cannot be overestimated. It needs little argument to show how exhausting physical diseases can so impair one's economic efficiency, so hamper one's ability to earn a living, as to render him a social misfit, causing him to drift from place to place, lowering his resistance to alcohol, drugs and such, and, in short, bringing about the very conditions that probation should seek to prevent.

But that which is of most far-reaching importance in this connection is the necessity for seeing to it that the delinquent be not a danger to the community. Reference is made to certain communicable diseases, regarded as dangerous to the public health—from which offenders in court are commonly suffering. We refer to venereal disease, considered in many quarters as the most serious menace facing the human race.

It is clearly the duty of those having to do with delinquents to see to it that these conditions are sought out and treated, if such individuals are to be returned to the community.

With the aim in view of showing the practical relationship of such facts as those above mentioned, to the routine work of the court, the following study was undertaken.

Records of the last 1000 cases examined were taken from the files, and the physical condition of each person noted, also the relationship which his physical condition bore—if any—to his economic efficiency. Case records of both men and women were included in this series.

Additional tables of a group of six hundred consecutive venereal studies are included.

The following table gives a general picture of the physical health of these 1000 individuals. Those rated *good* were practically free from any condition that might impair health. Those rated *fair* were suffering from minor ailments of little consequence to general health, and produced very little impression on the physical strength of the individual. Those rated *poor* were sick people, and urgently in need of medical treatment. Those rated *bad* were emergency hospital cases.

TABLE I.

SHOWING PHYSICAL CONDITION OF 1000 DELINQUENTS IN COURT.

Good physical condition	203
Fair physical condition	455
Poor physical condition	327
Bad physical condition	15

668 individuals, or 66.8% of our cases, were in good or fair health.

342 individuals, or 34.2%—one out of every three persons—was in poor or bad health, and in such physical condition as to warrant urgent medical treatment.

Just what relationship these figures bear to adult offenders as a whole, it is hardly safe to state. It is interesting, however, in this connection to refer to a recent study of immoral women, made by the writer, in which 44% of the women were in poor or bad physical condition from diseases other than venereal (tuberculosis, asthma, Bright's disease, heart disease, etc.). Should anything like such findings be borne out in a study of other groups of adult offenders, then our above estimate among these 1000 cases (34.2%) could hardly be considered extravagant.

Following is a partial list of the conditions from which these individuals were suffering:

TABLE II.

SHOWING A PARTIAL LIST OF PHYSICAL CONDITIONS OTHER THAN VENEREAL, FOUND AMONG 1000 DELINQUENTS.

Abscesses	25
Skin diseases	150
Diseases of nervous system	200
Heart disease	100
Bronchitis (acute and chronic)	144
Tuberculosis	25
Pregnancy	28
Pyorrhea	50
Pelvic conditions in women (salpingitis, uterine prolapse, etc.)	26
Thyroid disease	20
Rhinitis	38
Enlarged tonsils	65
Glandular enlargements	60
Injuries and diseases of bones and joints (arthritis, ankylosis, fractures and spinal curvature)	65
Arteriosclerosis	30
Varicose veins	45
Tumors	15
Ulcers	20
Carious teeth	150
Defect and diseases of eye	125
Defective hearing	90
Laryngitis	25
Tonsillitis	13
Stomatitis	10
Bright's disease	7
Paralysis	3

Other conditions, such as hydrocele, rectocele, varicocele, cysts, etc., were found.

Something more than fatherly talks, intelligent advice, general supervision and securing employment is needed to solve the problem presented by the delinquent whose physical endurance is rapidly diminishing under a progressive Bright's disease or tuberculosis, or the delinquent who is scattering broadcast into the community syphilis and gonorrhea. These are conditions of which he may be entirely unaware, and yet which are of more vital importance to his future welfare and that of the community in which he lives, than any other consideration.

Probably one of the most important measures utilized in rehabilitating the delinquent on probation is steady employment. The following table will give some idea of how these 1000 delinquents have demonstrated their ability in this direction. About 626, or 62.6%, were considered self-supporting, while 374, or 37.4%, were not self-supporting.

TABLE III.

SHOWING ECONOMIC EFFICIENCY OF 1000 DELINQUENTS SEEN IN COURT.

Regularly employed	243
Irregularly employed	383
Odd jobs	90
At home	146
Never worked	138
	1000

In this connection it is well to bear in mind that 66.8% of these 1000 individuals were in good or fair health, and that 34.2% were in poor or bad health. Some correlation between the two seems evident. This is brought out more clearly and in detail in the following table:

TABLE IV.

SHOWING RELATIONSHIP BETWEEN PHYSICAL CONDITION AND INDUSTRIAL EFFICIENCY OF 1000 DELINQUENTS.

	REGULAR	IRREGULAR	AT HOME	NO WORK	ODD JOBS	TOTAL
Good	121	68	11	1	2	203
Fair	114	262	37	18	24	455
Poor	8	53	95	111	60	327
Bad	0	0	3	8	4	15
Total	243	383	146	138	90	1000

Thirty-five per cent. of those found to be in good or fair physical condition had been steadily employed, while only 2% of those found to be in poor or bad physical condition had been steadily employed.

Eighty-five per cent. of those found to be in good or fair physical condition had been and still were self-supporting, while only 18% of those found to be in poor or bad physical condition had been and were still self-supporting.

The chances for being self-supporting were more than four to one in favor of the individual in good physical condition.

Ninety-six per cent. of those regularly employed were found in good or fair physical condition, while only 3% were found to be in poor or bad physical condition.

Eighty-six and three-tenths per cent. of those who were rated as "never worked" were found to be in poor or bad physical condition, while only 13.7% were found to be in good or fair physical condition.

That there is a relationship, and a very definite one, between an individual's regularity of employment and his physical condition seems to require no further argument. So high is this correlation, that one can, without fear of denial, assert that really successful probation presupposes a knowledge of the physical condition of the delinquent in advance of his treatment. And, further, really successful probation finds a rather close correlation between an individual's physical rehabilitation and his moral readjustment.

There is another and darker side to this question,—one which is of special importance to the court in fulfilling its protective function to the community, particularly in view of the recent stand taken by the National Government as to the seriousness of the menace which this condition referred to presents. We have in syphilis and gonorrhea two well-recognized dangers to the health of the community—two diseases fraught with the most serious consequences to the individual and to the race.

Every effort of our national, state and local health authorities is now being bent in the direction of placing those infected under treatment.

It goes without saying that of all institutions, our courts, because of the very nature of their position in the community, are not only willing, but anxious, to coöperate in this direction.

With a view to determining the extent of the problem presented by these two diseases as found amongst delinquents in court, a group of six hundred (600) consecutive cases were gone over. The cases selected represented the average daily "run of the mine," inasmuch as it is the policy of the medical service of this court to make a venereal study of every offender referred for examination, no matter whether there is any suspicion of past venereal infection or not.

The frequency with which these conditions were found among six hundred (600) individuals is shown in the following table:

Table V.

Showing Frequency of Venereal Disease among 600 Delinquents.

No. cases examined	600
Syphilis	182
Gonorrhea	133
Combined	32
Doubtful cases	27
Per cent. of cases examined having venereal disease	47%

Forty-seven per cent. of these individuals were suffering from one or both of these diseases. An additional 4.5% had doubtful blood and smears. Practically every other person in this group had syphilis or gonorrhea, or both conditions. Without a routine medical examination there is no safe and sane method of determining in court whether an individual is free from venereal infection.

These conditions are not, as is generally supposed, limited to purely chastity offenders; they are widely scattered among all classes of offenders. The following table will make this more clear:

Table VI.

Showing Venereal Disease as Related to Type of Offense Committed.

	Chastity	Drunk	Larceny	Possession of Drugs	Violation of Liquor Law	Bastardy Complaint	Stubborn Child	Neglect of Child	Assault and Battery	Arson	Total
	303	*134*	*112*	*17*	*3*	*17*	*5*	*3*	*3*	*1*	*600*
Syphilis	105	43	21	6	2	1	1	0	3	0	182
Gonorrhea	85	18	23	3	0	1	0	2	1	0	133
Combined	16	9	6	0	0	0	0	0	1	0	32
Total number of venereal cases	174	52	38	9	2	2	1	2	3	0	283
Number doubtful cases	15	15	0	1	0	1	0	0	0	1	27
Per cent. of venereal cases	57.4%	38.8%	33.9%	53%							

Three hundred and three cases were so-called offenders against chastity; of these 57.4% were suffering from syphilis or gonorrhea, or both. An additional 4.9% had doubtful bloods and smears.

There were 134 cases of drunkenness; 38.8% of these individuals had venereal disease, while an additional 6.5% were doubtful cases.

There were 112 cases of larceny; of these individuals 33.9%, or one out of every three cases, had syphilis or gonorrhea, or both.

There were 17 individuals arrested for possession of drugs, and 53% had venereal disease.

There were three arrested for violating the liquor law, two of whom had syphilis.

Three were arrested for assault and battery; all three had venereal disease.

In short, these conditions are not limited to any one special type of offender in court, but are found common among delinquents in general.

It is the size and extent, as well as the seriousness of this problem to which we wish to call special attention. We are not dealing with a condition limited to the prostitute class; we are not dealing with a situation of merely secondary importance.

In syphilis and gonorrhea we have two diseases that are more far-reaching in the consequences with which they threaten the individual and the race than any other menace. These two conditions are found affecting all types of offenders seen in court. The gonorrheal prostitute is no more of a public danger than the syphilitic barber, or the pugnacious restaurant cook arrested for assault and battery, who was found in the infectious stage of syphilis.

The problem is large enough and is serious enough to demand a broad and comprehensive policy on the part of our courts,—a policy calling for a more routine investigation of the physical condition and the possibilities of each offender prior to his disposition.

SUMMARY.

The original purpose of this study was to determine what part, if any, routine physical examination might play in the disposition of a delinquent's case in court, and later in the institution of reconstructive measures while on probation.

For this purpose the records of our last 1000 cases were taken from the files, and the physical condition of each person noted; also the relationship which the physical condition bore, if any, to his economic efficiency.

Six hundred sixty-eight individuals, or 66.8% of our cases, were in good or fair health; 342 individuals, or 34.2%—one out of every three persons—were in poor or bad health, and in such physical condition as to warrant urgent medical treatment.

About 626, or 62.6%, were considered self-supporting; while 374, or 37.4%, were not self-supporting.

Some correlation between these figures is evident.

Thirty-five per cent. of those found to be in good or fair physical condition had been steadily employed; while only 2% of those found to be in poor or bad physical condition had been steadily employed.

Eighty-five per cent. of those found to be in good or fair physical condition had been, and still were self-supporting; while only 18% of those found to be in poor or bad physical condition had been and were still self-supporting. The chances for being self-supporting were more than four to one in favor of the individual in good physical condition.

Additional facts are included bearing upon the frequency of venereal disease among a group of 600 consecutive cases studied.

Forty-seven per cent. of these individuals were suffering from one or both of these diseases; an additional 4.5% had doubtful bloods and smears.

Of these 600 cases, 303 were so-called offenders against chastity; of these, 57.4% were suffering from syphilis or gonorrhea, or both; while an additional 4.9% were doubtful cases.

There were 134 cases of drunkenness; 38.8% of these individuals had venereal disease; an additional 6.5% were doubtful cases.

There were 112 cases of larceny. Of these individuals, 33.9%, or one out of every three cases, had syphilis or gonorrhea, or both.

There were 17 individuals arrested for possession of drugs; 53% of these had venereal disease.

Other types of offenders in court showed a correspondingly high frequency of these conditions.

In short, the conclusion reached from this study is that venereal disease is not limited to any one type of offender in court, but is found common among all classes of delinquents, and that a policy calling for a more routine investigation of the physical condition and the possibilities of each offender, prior to his disposition, would seem justifiable.

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IDENTIFICATION OF SOLDIERS AFTER DEATH BY HEAD MEASUREMENTS.

By Arthur MacDonald,

Anthropologist, Washington, D. C.

I desire to give some reasons why, in measuring soldiers for fitness to enter military service, the maximum length and maximum width of the head should be taken, along with the measurements of height, girths of chest and weight, and with other data required in the physical examination of soldiers.

After the war, and probably during the war, Americans will desire to know, if not insist on knowing, all that is possible about their lost, missing and buried ones in Europe. Many will ask questions something like these: "Does the grave, marked by the provisional cross in the military cemetery, really contain the body of our son, brother, or father?" "Is the body of the prisoner who died in the enemy's hands, one of our family?" These and similar inquiries are sure to arise among American citizens, who constitute a nation which is extremely humanitarian, and a people who have shown themselves most generous in their war dealings. The necessity of identification in order to receive insurance money from the Government and from private companies, in difficult, doubtful and exceptional conditions, is apparent to every one. When it is a question of receiving five or ten thousand dollars insurance, sentiments against exhuming bodies, breaking open sealed caskets and the like will soon disappear. Not only this, but doubtless various fraudulent schemes will be attempted in the identification of the dead in order to obtain money.

If the French are asked to help in identification they will doubtless do all they can, and they are scientifically most expert in identification methods.

MAXIMUM LENGTH AND MAXIMUM WIDTH OF HEAD.

After soldiers are buried singly or in groups, and often in great haste, many of the usual means of identification may be lost, missing, or mixed with those of other soldiers, and, owing to the many vicissitudes of war, such methods of identification may be of little or no avail.

If, however, the maximum length and maximum width of the head of a soldier have been recorded, these two measurements will be available for purposes of identification of the dead, and this, with collateral evidence of the condition of the teeth as recorded by the dentist at home, and with the additional evidence as to age of the skeleton, as indicated by degrees of ossification, will greatly facilitate and increase the probability of identification, where otherwise it might be very difficult, if not impossible to accomplish.

COLLATERAL EVIDENCE WITH THE HEAD MEASUREMENTS.

Teeth. Dentists usually keep a record of their daily work for each individual as to teeth filled, nature of filling, class, size, form, position and regularity of teeth treated; degree of decay, much or superficial, broken or with roots only existing, teeth missing. Such and other details familiar to dentists, combined with the two head measurements, would be very valuable either as positive or negative evidence of identity.

Synostosis. This is one of the first signs of age in the skeleton; the spot where it first appears varies with age. The most frequent place is at a point on the sagittal suture at the union of its posterior fifth with its anterior three-fifths, where the suture is clearly marked *obélion.* If the suture is entire, the individual is about 35 years of age or less. If the posterior sagittal point is commencing to close in, the individual is about 40 years of age. The ossification of the coronal suture close to bregma would indicate a person 50 or more years of age. If the temporal suture is closed, it indicates an age of 66 years or more. In the white race ossification generally proceeds from behind forwards; in the negro race it is the reverse. Wearing away of teeth and character of jaw can give idea of age.

CONDITION OF SKELETON IN GENERAL AS INDICATION OF AGE: OSSIFICATION OF LONG BONES.

A few of many points might be mentioned: (*a*) at the age of 16, the calcaneum is ossified throughout; (*b*) at 17, the greater trochanter is united to the head of the femur; (*c*) at 18, the superior extremity of the femur is united in its entirety to the shaft; (*d*) at 19, the epiphyses of the metatarsal bones are united to the body; (*e*) at 20, the epiphyses of the metacarpal bones are united to the body; (*f*) at 45, the xiphoid cartilage is ankylosed to the sternum; (*g*) at 50, the coccyx is ankylosed to the sacrum. These and other general statements, based upon many authorities, would help much, as collateral evidence, with the head measurements.

Data taken from the regular physical examination of the soldiers, including marks, scars, osseous and other peculiarities, might be of additional service in the identification after death, according to the condition of the body, or degree of decomposition, etc.

HEAD MEASUREMENTS OF THE LIVING COMPARED WITH THOSE OF THE DEAD.

In a study of 1139 skulls of persons of different nationalities, and who at death were in various conditions of nutrition, Czekanowski, a Polish writer, gives the various thickness of the soft parts of the skull at the place of maximum width and maximum length. Taking an average of these, I find 5.1 millimeters thickness of the soft parts of the maximum length and 6.9 millimeters for those of the maximum width. In comparing, therefore, the measurements of the skull, where the soft parts are decayed away, with the measurements of the head of the living person to whom the skull is supposed to belong, 5 millimeters should be added to the maximum length and 7 millimeters (avoiding fractions) to the maximum width of the skull.

In addition to this, the cephalic index of the living subject can be compared with that of his skull after death, by adding two units to the cephalic index of the skull, as is done by Topinard and other leading authorities.

Thus, if it be claimed that a decomposed body is that of a dead or missing soldier, whose head we know to have been dolichocephalic, whether the skull of the body in question is dolichocephalic or not can easily be determined, and if not dolichocephalic, it is quite evident that a mistake has been made, if not fraud committed. If, however, the skull be dolichocephalic, the degree of dolichocephaly can be found and its correspondence with the head of the previously living subject determined. This, with the collateral evidence from data as to teeth and ossification signs of age of the skull and rest of the skeleton, will greatly aid in the identification of heads of the living with their skulls after death, and both positively and negatively. The negative evidence can prevent much fraud.

TIME REQUIRED AND EXPENSE OF TAKING THE HEAD MEASUREMENTS.

The time necessary to take the maximum length and maximum width of head is one minute. The head measurements could be taken best along with the measurements of height, chest girths, etc. If this is not done by those making the regular measurements required in the physical examination of soldiers, it could be done at other times, and with a force of ten persons, from three to four thousand could be measured in a day. The calipers for making the measurements would cost about ten dollars a pair. The salaries of the force of ten or more, if thought best to increase it, could be arranged as are the salaries of those now conducting the psychological measurements of the soldiers.

PHYSICAL STATUS OF THE AMERICAN PEOPLE.

The physical measurements of our young men which are being made in connection with their entrance into military service, is a beginning on a large scale of establishing the physical status of the American people. The measurements of maximum length and width of head, furnishing the cephalic index, are the two most important physical measurements of the body. In most all scientific studies of races and peoples, these two head measurements are taken. The physical and psychological measurements now being taken of the soldiers would not only have their scientific value greatly increased by the addition of these two head measurements, but the physical status of the American people would be made comparable with that of other peoples, races and nations.

The American people, who are paying and sacrificing for the war, are entitled to such knowledge, not only on account of the practical reasons for identification already set forth, but for its permanent and general value to the whole American nation now, and especially in the future. And unless these most important measurements are taken now, requiring but one minute of time, this opportunity of making all the measurements—mental, moral and physical—of much more present and permanent value, will practically be lost.

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PATHOLOGICAL CLASSIFICATIONS OF PULMONARY TUBERCULOSIS.

BY HERBERT F. GAMMONS, M.D., CARLSBAD, TEXAS.

THE resulting reaction of tissues to the injury by the entrance of the tubercle bacillus, depends upon the virulence of the bacilli, the resistance of the host, the number of bacilli and the length of time of contact of the bacilli with the tissues. Furthermore, the treatment of the infected person influences the pathological condition to a great extent.

It is very uncommon to find a single stage of disease in a tuberculous person if the disease has been present for some time; for instance, it is not uncommon to find, in the same lobe of the lung, caseation, necrosis, inflammation, fibrosis and calcification.

However, it is possible to divide the disease, according to its pathology, into inflammatory and ulcerative types, and these two types may be subdivided into fibro-inflammatory or fibro-ulcerative of the incipient moderately advanced or advanced stage, as the case may be, according to the other manifestations of the disease.

The diagnosis of these conditions may be made clinically by stethoscopic examination and also by observation of the sputum and by the use of the x-ray; the inflammatory cases having, as a rule, broncho-vesicular or, possibly, bronchial breathing in some instances, depending on the site of the lesion; some cases, however, do not have any modification of the vesicular breathing, but they do show fine râles of a crepitant nature.

The ulcerative case shows at some time mucopurulent or purulent sputum, with elastic-tissue fibers, and stethoscopic examination shows signs of cavitation, at times very slight, including marked variation in the vesicular respiration, increased sound transmission and râles of a mucous character, depending on the stage of the ulceration.

X-ray examination shows all degrees of shadows, depending on the stage of the ulceration, while in simple inflammatory cases, where the inflammation is more or less diffused, the x-ray examination has been negative. When there is a faint shadow surrounding a deeper shadow on x-ray examination, there is usually active inflammation in this faint shadowy area which is surrounding the old fibroid or ulcerative process that gave the darker shadow.

The classification of pulmonary tuberculosis, as used by the National Association for the Study and Prevention of Tuberculosis until recently, has dealt more with the length of time of infection, and the area of infection, than with the pathology of the disease.

Rathburn's modification[1] of previous classifications increases the flexibility of the previous classifications; however, it seems probable that the classification of pulmonary tuberculosis may be made a little more useful from a therapeutic and prognostic standpoint, if we consider the disease from the standpoint of its pathology, at the same time considering the extent of involvement, length of time of disease, resistance of the patient, and virulence of the infecting organisms, as shown by the constitutional symptoms.

The treatment of these different pathological conditions in pulmonary tuberculosis is not all the same for each type. For instance, a simple inflammatory incipient case, with no constitutional symptoms, does not need the rest that other types need. The moderately advanced ulcerative case often needs more rest than the advanced fibro-inflammatory case which has no constitutional symptoms.

The prognosis of all these types and stages depends on the treatment, to a certain extent; however, the far-advanced cases of the fibro-inflammatory type, and without constitutional symptoms, has not only developed his immunity but he has also developed a great mechanical resistance in the affected areas, as has been shown by Krause[2], and will often do better and live longer, with proper treatment, than the active inflammatory type of the incipient stage.

By using the present classification of Rathburn[1] and adding the pathological type, as is found by observing the sputum and by examination with the stethoscope and x-ray, it is probable that we may give the patient more definite advice as regards the prognosis and treatment of his disease.*

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[1] Rathburn: American Review of Tuberculosis, Vol. i, No. 1, p. 1.
[2] Krause: American Review of Tuberculosis, Vol. i, No. 2, p. 65.

IDIOPATHIC EPILEPSY A SYMPATHICOPATHY.

By Edward A. Tracy, M.D., Boston.

(Continued from page 780.)

Nov. 8, 1916. Obs. 278. 8 p.m. Reaction time: left forearm, 15 seconds; right forearm, 14 seconds; left face, 10 seconds; right face, 9 seconds. Patient had an attack of convulsions at 4 a.m. the next morning.

Nov. 9, 1916. Obs. 282. 8 p.m. Reaction time: left forearm, 21 seconds; right forearm, 15 seconds; left face, 8 seconds; right face, 8 seconds. Patient had two attacks of convulsions in the early morning following.

Nov. 10, 1916. Obs. 286. 8 p.m. Reaction time: left forearm, 15 seconds; right forearm, 18 seconds; left face, 9 seconds; right face, 8 seconds. Patient had an attack at 8 o'clock the following morning.

Nov. 18, 1916. Obs. 318. 9 a.m. Reaction time: left forearm, 14 seconds; right forearm, 13 seconds; left face, 11 seconds; right face, 14 seconds. Patient had an attack at 11 a.m., two hours after the observation was made.

Obs. 320. 7 p.m. Reaction time: left forearm, 14 seconds; right forearm, 13 seconds; left face, 15 seconds; right face, 11 seconds. Patient had an attack at 3 o'clock the next morning.

Nov. 19, 1916. Obs. 323. 7 p.m. Reaction time: left forearm, 12 seconds; right forearm, 11 seconds; left face, 11 seconds; right face, 11 seconds. Patient had convulsions at 3 o'clock the next morning.

Nov. 20, 1916. Obs. 328. 7.45 p.m. Reaction time: left forearm, 16 seconds; right forearm, 15 seconds; left face, 11 seconds; right face, 9 seconds. Patient had convulsions at 3 o'clock the next morning.

Nov. 21, 1916. Obs. 333. 7.45 p.m. Reaction time: left forearm, 20 seconds; right forearm, 15 seconds; left face, 10 seconds; right face, 11 seconds. Patient had convulsions at 5 o'clock the next morning.

Nov. 28, 1916. Obs. 369. 7.30 p.m. Reaction time: left forearm, 11 seconds; right forearm, 14 seconds; left face, 10 seconds; right face, 9 seconds. Patient had convulsions the next morning at 9 o'clock.

Dec. 17, 1916. Obs. 443. 7 p.m. Reaction time: left forearm, 13 seconds; right forearm,

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* The schema, as worked out by Rathburn, offers the following combinations: Incipient, Moderately Advanced and Advanced, A, B, and C; the suffixes denoting, respectively: Slight or no symptoms; Moderate symptoms, or Severe symptoms.

14 seconds; left face, 11 seconds; right face, 10 seconds. Patient had convulsions the next morning at 8.30 o'clock.

Dec. 23, 1916. Obs. 462. 8 p.m. Reaction time: left forearm, 13 seconds; right forearm, 11 seconds; left face, 10 seconds; right face, 11 seconds. Patient had convulsions at 4 and 8.40 o'clock the next morning.

Jan. 1, 1917. Obs. 485. 7 p.m. Reaction time: left forearm, 15 seconds; right forearm, 11 seconds; left face, 11 seconds; right face, 9 seconds. Patient had convulsions at 7.45 o'clock the next morning.

Jan 9, 1917. Obs. 512. 7.30 p.m. Reaction time: left forearm, 16 seconds; right forearm, 10 seconds; left face, 13 seconds; right face, 10 seconds. Patient had convulsions at 5 o'clock the next morning.

Jan. 15, 1917. Obs. 530. 8.30 p.m. Reaction time, left forearm, 12 seconds; right forearm, 15 seconds; left face, 11 seconds; right face, 11 seconds. Convulsions at 5 o'clock the next morning.

Jan. 25, 1917. Obs. 557. 8 p.m. Reaction time: left forearm, 17 seconds; right forearm, 17 seconds; left face, 11 seconds; right face, 10 seconds. Convulsions at 6 o'clock the next morning.

Jan. 26, 1917. Obs. 560. 8 p.m. Reaction time: left forearm, 20 seconds; right forearm, 19 seconds; left face, 10 seconds; right face, 11 seconds. Convulsions at 3 o'clock the next morning.

Feb. 6, 1917. Obs. 585. 7.30 p.m. Reaction time: left forearm, 10 seconds; right forearm, 15 seconds; left face, 9 seconds; right face, 11 seconds. Convulsions followed in the early morning at 1.30 and 2.30 o'clock.

Feb. 13, 1917. Obs. 596. 7.30 p.m. Reaction time: left forearm, 15 seconds; right forearm, 15 seconds; left face, 11 seconds; right face, 11 seconds. Convulsions during the night and again at 7.30 o'clock the next morning.

Feb. 21, 1917. Obs. 615. 7 p.m. Reaction time: left forearm, 16 seconds; right forearm, 10 seconds; left face, 11 seconds; right face, 10 seconds. Convulsions the next morning at 9 o'clock.

March 3, 1917. Obs. 639. 8 p.m. Reaction time: left forearm, 14 seconds; right forearm, 12 seconds; left face, 10 seconds; right face, 10 seconds. Convulsions followed at 4 o'clock the next morning.

March 28, 1917. Obs. 682. 8 p.m. Reaction time: left forearm, 13 seconds; right forearm, 10 seconds; left face, 10 seconds; right face, 9 seconds. Convulsions at 3 o'clock and 7.30 o'clock the next morning.

March 31, 1917. Obs. 691. 7.30 p.m. Reaction time: left forearm, 18 seconds; right forearm, 20 seconds; left face, 11 seconds; right face, 10 seconds. During the night had two attacks of convulsions.

April 6, 1917. Obs. 709. 8 p.m. Reaction time: left forearm, 11 seconds; right forearm, 11 seconds; left face, 10 seconds; right face, 10 seconds. Convulsions during the night and the next morning.

May 1, 1917. Obs. 790. 7 p.m. Reaction time: left forearm, 19 seconds; right forearm, 16 seconds; left face, 15 seconds; right face, 11 seconds. Convulsions at 2.30 and at 6 o'clock the next morning.

May 2, 1917. Obs. 794. 8 p.m. Reaction time: left forearm, 11 seconds; right forearm, 13 seconds; left face, 14 seconds; right face, 10 seconds. Convulsions at 5 o'clock the next morning.

May 3, 1917. Obs. 798. 7.30 p.m. Reaction time: left forearm, 19 seconds; right forearm, 20 seconds; left face, 13 seconds; right face, 9 seconds. Convulsions that night at 1.30 o'clock.

May 16, 1917. Obs. 847. 8 p.m. Reaction time: left forearm, 17 seconds; right forearm, 23 seconds; left face, 10 seconds; right face, 9 seconds. Convulsions next morning at 4 o'clock.

May 24, 1917. Obs. 876. 8 p.m. Reaction time: left forearm, 17 seconds; right forearm, 14 seconds; left face, 10 seconds; right face, 10 seconds. Convulsions next morning at 8 o'clock.

May 25, 1917. Obs. 880. 8 p.m. Reaction time: left forearm, 14 seconds; right forearm, 16 seconds; left face, 9 seconds; right face, 9 seconds. Convulsions at 7 o'clock the next morning.

June 8, 1917. Obs. 913. 7.30 p.m. Reaction time: left forearm, 15 seconds; right forearm, 15 seconds; left face, 11 seconds; right face, 10 seconds. Convulsions at 5 and 9 o'clock the next morning.

June 15, 1917. Obs. 931. 8 p.m. Reaction time: left forearm, 13 seconds; right forearm, 8 seconds; left face, 11 seconds; right face, 10 seconds. Convulsions next morning at 5.30 o'clock.

June 23, 1917. Obs. 948. 8 p.m. Reaction time: left forearm, 13 seconds; right forearm, 8 seconds; left face, 9 seconds; right face, 11 seconds. During the night patient had two attacks of convulsions.

June 28, 1917. Obs. 964. 8.30 p.m. Reaction time: left forearm, 11 seconds; right forearm, 11 seconds; left face, 11 seconds; right face, 9 seconds. Convulsions at 3.30 and 5.45 o'clock in the morning.

July 9, 1917. Obs. 995. 8 p.m. Reaction time: left forearm, 11 seconds: right forearm, 12 seconds: left face, 9 seconds; right face, 10 seconds. Convulsions during the night at 1 and 3.30 o'clock.

Oct. 27, 1917. Obs. 1359. 6.40 p.m. Reaction time: left forearm, 10½ seconds; right forearm, 12 seconds; left face, 11 seconds; right face, 12½ seconds. Two attacks of convulsions during the night.

Nov. 9, 1917. Obs. 1398. 5.30 p.m. Reaction time: left forearm, 7½ seconds; right forearm, 8½ seconds; left face, 12 seconds;

right face, 12½ seconds. Convulsions at 5.30 o'clock the next morning.

The diseased condition of the sympathetic neurones, evidenced by the vasoconstriction spots heretofore described, is further shown by the abnormal reaction times of the vasoconstriction reflex, many examples of which already have been given in this essay. A demonstration of another abnormality of the reaction times follows. It has been mentioned that, in the normal individual, the vasoconstriction reflex to stroking the skin of the forearm is quicker to appear than that which follows stroking the face. In chronic idiopathic epilepsy the reverse is frequently noted, *i.e.*, the reaction time of the face is less than that of the forearm. A glance over the observations in Case 1, given above, shows this abnormality. The finding is confirmed by the following records of single observations made in fifty-five other cases of this disease.

Case 2. Obs. 1508. Reaction time: left forearm, 12 seconds; right forearm, 15 seconds; left face, 11 seconds; right face, 13 seconds.

Case 4. Obs. 1504. Reaction time: left forearm, 12 seconds; right forearm, 18 seconds; left face, 10 seconds; right face, 8 seconds.

Case 6. Obs. 1522. Reaction time: left forearm, 12 seconds; right forearm, 12 seconds; left face, 10 seconds; right face, 11 seconds.

Case 9. Obs. 1532. Reaction time: left forearm, 15 seconds; right forearm, 12 seconds; left face, 10 seconds; right face, 11 seconds.

Case 11. Obs. 1540. Reaction time: left forearm, 16 seconds; right forearm, 8 seconds; left face, 10 seconds; right face, 13 seconds.

Case 12. Obs. 1544. Reaction time: left forearm, 13 seconds; right forearm, 16 seconds; left face, 10 seconds; right face, 14 seconds.

Case 14. Obs. 1551. Reaction time: left forearm, 19 seconds; right forearm, 15 seconds; left face, 10 seconds, patchy; right face, 7 seconds, patchy.

Case 15. Obs. 1555. Reaction time: left forearm, 12½ seconds; right forearm, 10 seconds; left face, 10 seconds; right face, 6 seconds.

Case 16. Obs. 1557. Reaction time: left forearm, 8½ seconds; right forearm, 11 seconds; left face, 10 seconds; right face, 8 seconds.

Case 17. Obs. 1562. Reaction time: left forearm, 10 seconds; right forearm, 9 seconds; left face, 9 seconds; right face, 12 seconds.

Case 18. Obs. 1566. Reaction time: left forearm, 10 seconds; right forearm, 7 seconds; left face, 10 seconds, patchy; right face, 17 seconds.

Case 19. Obs. 1570. Reaction time: left forearm, 16 seconds; right forearm, 7 seconds; left face, 11 seconds, patchy; right face, 6 seconds.

Case 20. Obs. 1574. Reaction time: left forearm, 9 seconds; right forearm, 13 seconds; left face, 10 seconds; right face, 11 seconds, patchy.

Case 21. Obs. 1577. Reaction time: left forearm, 9 seconds; right forearm, 13 seconds; left face, 10 seconds; right face, 12 seconds.

Case 22. Obs. 1579. Reaction time: left forearm, 21 seconds; right forearm, 15 seconds; left face, 8 seconds, patchy.

Case 23. Obs. 1582. Reaction time: left forearm, 8½ seconds; right forearm, 13 seconds; left face, 7 seconds, patchy; right face, 7 seconds.

Case 24. Obs. 1585. Reaction time: left forearm, 11 seconds; right forearm, 9 seconds; left face, 10 seconds, patchy; right face, 11 seconds.

Case 25. Obs. 1589. Reaction time: left forearm, 12 seconds; right forearm, 15 seconds; left face, 11 seconds; right face, 15 seconds. patchy.

Case 26. Obs. 1593. Reaction time: left forearm, 12 seconds; right forearm, 9 seconds; left face, 7 seconds; patchy; right face, 10 seconds.

Case 29. Obs. 1603. Reaction time: left forearm, 12 seconds; right forearm, 9 seconds; left face, 8 seconds; right face, 10 seconds.

Case 30. Obs. 1607. Reaction time: left forearm, 15 seconds; right forearm, 15 seconds; left face, 8 seconds, patchy; right face, 12 seconds.

Case 31. Obs. 1610. Reaction time: left forearm, 16 seconds; right forearm, 17 seconds; left face, 6 seconds; right face, 13 seconds, patchy.

Case 32. Obs. 1612. Reaction time: left forearm, 11 seconds; right forearm, 8 seconds; left face, 10 seconds; right face, 9 seconds.

Case 33. Obs. 1615. Reaction time: left forearm, 15 seconds; right forearm, 25 seconds;

left face, 14 seconds, patchy; right face, 9½ seconds, patchy.

CASE 34. Obs. 1618. Reaction time: left forearm, 10 seconds; right forearm, 12 seconds; left face, 10 seconds; right face, 11 seconds, patchy.

CASE 36. Obs. 1623. Reaction time: left forearm, 19 seconds; right forearm, 13½ seconds; left face, 8½ seconds, patchy; right face 10 seconds, patchy.

CASE 37. Obs. 1626. Reaction time: left forearm, 15 seconds; right forearm, 15 seconds; left face, 15 seconds; right face, 16 seconds, patchy.

CASE 39. Obs. 1631. Reaction time: left forearm, 15 seconds; right forearm, 7 seconds; left face, 14 seconds; right face, 9 seconds.

CASE 40. Obs. 1633. Reaction time: left forearm, 13 seconds; right forearm, 10 seconds; left face, 20 seconds; right face, 15 seconds, patchy.

CASE 41. Obs. 1637. Reaction time: left forearm, 12 seconds; right forearm, 12 seconds; left face, 19 seconds, patchy; right face, 15 seconds, patchy.

CASE 43. Obs. 1642. Reaction time: left forearm, 15 seconds; right forearm, 20 seconds; left face, 20 seconds, patchy; right face, 15 seconds, patchy.

CASE 45. Obs. 1646. Reaction time: left forearm, 12 seconds; right forearm, 9 seconds; left face, 13 seconds, patchy; right face, 15 seconds, patchy.

CASE 46. Obs. 1649. Reaction time: left forearm, 23 seconds; right forearm, 11 seconds; left face, 13 seconds; right face, 17 seconds, patchy.

CASE 47. Obs. 1651. Reaction time. left forearm, 13 seconds; right forearm, 15 seconds; left face, 13 seconds; right face, 11 seconds.

CASE 49. Obs. 1656. Reaction time: left forearm, 15 seconds; right forearm, 15 seconds; left face, 10 seconds; right face, 11 seconds.

CASE 50. Obs. 1659. Reaction time: left forearm, 15 seconds; right forearm, 10 seconds; left face, 10 seconds; right face, 14 seconds.

CASE 51. Obs. 1660. Reaction time: left forearm, 13 seconds; right forearm, 7 seconds; left face, 10 seconds; right face, 12 seconds, patchy.

CASE 52. Obs. 1667. Reaction time: left forearm, 16 seconds; right forearm, 12 seconds; left face, 10 seconds; right face, 9 seconds.

CASE 53. Obs. 1669. Reaction time: left forearm, 18 seconds; right forearm, 9 seconds; left face, 8 seconds; right face, 10 seconds.

CASE 54. Obs. 1672. Reaction time: left forearm, 10 seconds; right forearm, 16 seconds; left face, 12 seconds; right face, 11 seconds.

CASE 56. Obs. 1678. Reaction time: left forearm, 20 seconds, patchy; right forearm, 15 seconds; left face, 13 seconds, patchy; right face, 12 seconds.

Another abnormality in the vasconstriction reaction to stroking, sometimes observed in chronic idiopathic epilepsy, is this: the white streak due to reflex vasoconstriction has not the evenness of the normal reaction,—parts of the streak are lacking; it is patchy in appearance. This defective vasoconstriction reaction, termed "patchy," was found present in twenty-three out of forty-two cases of this disease, as the reaction tests recorded above show.

Other abnormalities in the vasoconstriction reflex have been observed; not infrequently is seen a widespread area of pronounced vasoconstriction, in response to the testing stroke, in place of the ordinary white streak.

Very frequently has been observed a difference in the reaction times taken simultaneously in different parts of the same forearm. Normally, the reaction times for the forearm, stroked near the elbow, in the middle, and near the wrist, are practically the same, and the three resulting streaks are quite similar. In epilepsy the reaction times in these different locations, tested simultaneously on the same forearm, as a rule, vary, and frequently one of the stroked areas responds more quickly, or with a mose pronounced white streak than the others. (In making this and all other vasomotor reaction tests, the writer uses a little instrument devised for the purpose, which ensures the application of the same stimulus always,—the stimulus caused by a pressure of two and a half ounces.)

Having shown the diseased condition of sympathetic neurones, manifested by the varied abnormalities described in the vasoconstriction reflex and by the vasoconstriction spots, observations upon some phenomena connected with the latter appear worthy of consideration. During this research, the discovery was made that pigment spots are invariably associated with chronic vasoconstriction spots, that is, where such vasoconstriction spots are found, not far away pigment in the skin is also found. In the photogravures accompanying this essay these pigment spots appear with ink-like blackness. On the skin, pigment spots appear in various tints of brown, and are not at all as impressive as they appear in these pictures. Pigment spots have served a very useful purpose in the study of the vasoconstriction spots, for, being permanent, they served as landmarks for the location of the more elusive vasoconstriction spots. A sketch was made of the surface upon which vasoconstriction spots had been found, and the location of them relative to the pigment spots was indicated upon the sketch. Using this sketch as a map, further inspection of the surface a week or two after revealed the chronicity, change of location, etc., of the vasoconstriction spots that were under observation.

(To be continued.)

Society Report.

THIRTY-SECOND ANNUAL MEETING OF THE AMERICAN ORTHOPEDIC ASSOCIATION.

ARMY MEDICAL SCHOOL, WASHINGTON, D.C., APRIL 22-23, 1918.

(Continued from page 783.)

DISCUSSION.

MAJOR W. C. PETERS, M.R.C., said he had not had experience with men returning from the war. He had supervision of camps in the Middle West, and he wished to speak of fundamental principles involved. Major Hornsby had said that he did not consider this a time for the rehabilitation of the defective individual. Still, it was found that many cardiac cases could be treated by suitable exercise and many tuberculous cases could be made more fit. Even granting that operation was undesirable, many men could be made fit for the line, many more for limited service, and, thirdly, there was the important point of equal justice. It was not fair that one boy should give up his position to go to France and get shot, while the other boy could stay with his family and friends and keep his position just because he had flat feet. In the Middle West intensive training was being used more than operative methods, and the end justified the efforts.

MAJOR EMIL GEIST, M.R.C., said he was not a camp orthopedist; he was connected with the General Hospital, and these problems were rather different. He had watched the work of Major Corbusier, and it seemed to him that if one eliminated men from the Army and S.C.D'd them because they had flat feet they were going to waste a lot of good men, who at least were fit for selected service. The last order of the Surgeon-General was that men with flat feet should not be S.C.D'd. This was the most sensible order yet issued.

CAPTAIN MARSHALL, M.R.C., said that there were several very commendable features in this work of Captain Rich. In experience gathered as camp orthopedist at Camp Taylor he felt that many difficulties could be overcome by cooperation with hospital management. It was a big mistake to put a premium on disability. Many a malingerer would go from one ward to another and be seen by different consultants. A rank malingerer would thus pass his time surrounded by all the comforts of the Red Cross, and it was impossible to play the detective continually on these men. This occurred continually, and it was only by segregating these men that the plan could be worked out. Simulation of ankylosis of the knee was a favorite plan, and these men would put in several months in the hospital. This plan, advocated by Captain Rich, was by no means a pleasure cure, and was highly commendable in these malingering cases.

CAPTAIN TRUEHART, M.R.C., of Camp Cody, said he had seen a camp suffering from psychic flat foot. The cure was made extremely strenuous and it entirely eliminated the psychic side. The real flat feet were left. The strenuous training was then let up and it was found that many of these men would never be really fit for military duty. Many of them made excellent bakers, but they could never march. Old empyema cases were put under a course of exercises to prevent scolioses, which often developed after empyema. In this way one could clean out four or five hundred men from the hospital, and leave only 50 or 60.

CAPTAIN WHITBECK, M.R.C., said that he believed that his provisional régime was of the utmost importance. In the beginning of the war it was customary to reject all cases of feet which did not come up to a high standard. When the men enlisted they were rejected for foot conditions which did not come up to the

Regular Army standards. In the National Army there were many men who had been rejected for the Regular Army because they had flat feet. It would be found impossible to preserve the standard of perfect feet. Men were also found to fall out through disability or malingering. A number of these cases could be put in shape for military service. The second draft had picked up a lot of men who were passed by on the first draft, and eight months had thus been lost, therefore it was of the utmost importance that good judgment should be used. Forty-eight hours were wasted in going through the hospital routine, whereas if the men were examined in camp and referred to the casual detachment, the problem would be solved. The class could be placed under supervision of an orthopedic man, and many cases could be made fit by graduated exercise. This would relieve the congestion in the wards and make room for the really sick cases. Cases operated on for hernia and cases with sub-acute synovitis could get a chance to get into shape before being put in line duty.

Dr. S. Twinch, of Newark, said he would like to ask the members for some instruction in the examination of foot cases. The ideas were not uniform on the subject. One man rejects a foot that can't go into an ordinary shoe. Dr. Twinch said that many cases besides this were not fit, and he rejected them, irrespective of the orders.

Captain Test, M.R.C., of Camp Dodge, said that he could say a word in reference to the use of plaster. It would make no difference to the psychic foot; where the foot was really sensitive considerable relief could be gained by immobilization in plaster. Flat feet were of two kinds, the static flat foot, and the arthritic flat foot with history of rheumatism. There was little to do for the latter kind; the x-ray shows lipping of the edges of the tarsal bones. The static flat foot with stretched ligaments could be put up in a plaster for four weeks to allow of subsidence of inflammation, and then it could be strengthened by exercise. Probably there were many perfectly good flat feet. There was strain observed with high arch also. There was ethnic significance in this. The Scandinavian showed a thin foot with a high arch. This type of foot did not stand marching well. Putting pads under the metatarsal heads helped somewhat, and increasing the size of the shoes helped more. It had been found of help in teaching regimental surgeons about feet, to have two lantern slides made, showing a normal and an abnormal foot. It was important to be able to judge whether a man was malingering or not.

Captain E. R. Rich, in conclusion, said that he thought that any case bad enough to be put in plaster of Paris ought to be S.C.D'd. It was found difficult to get the Casual Detachment started in camps. The orthopedic man had to get in touch with the line officer, and sometimes it was necessary to telegraph to the Surgeon-General's office. The organization was a very essential one.

ORGANIZATION OF DIVISION OF ORTHOPEDIC SURGERY IN U. S. ARMY WITH EXPEDITIONARY FORCES.

Major Joel E. Goldthwait sent this paper. Briefly stated, the points covered were as follows: The chief work of the orthopedic surgeon is the salvage of men for duty; this consists of two parts—(*a*) proper physical training, (*b*) restoration of wounded. Under the first heading falls the general postural care, inspection of shoes and clothing, and special supervision of training. The second part involves the treatment or assistance in treatment of cases in which the bones and joints are injured, or in which the muscles, tendons or ligaments which are involved in the control of these parts are damaged, including proper supervision of splints, and transportation.

ORTHOPEDIC SURGERY IN THE ADVANCE ZONE.

Major Kendall Emerson, M.R.C., A.E.F., gave his paper. In time of stress, as at the present, perfect health was the most desirable asset; correct posture was essential in order to have the least possible interference with the functions of the abdominal viscera. It was essential that principles of hygiene should be understood by men and officers. In organizing an orthopedic unit the work was under a line officer and four orthopedic surgeons. It included two parts. First: Under proper physical training men were trained to become fit for full combat duty; 80% of the men were enabled to reach this standard. The second part of the work dealt with the restoration of the wounded and included the splints used for their transportation, and their subsequent hospital treatment and re-education. It was felt that the orthopedic surgeon had a special duty to perform in the advanced areas of warfare. Attention had to be given to the soldier when he fell, and the stages from the trenches to the hospital train were under special care. The ambulance service had no facilities for operation, owing to air raids, and the first opportunity for operating was the evacuation hospital. A stationary hospital with a permanent staff, five miles back from the line of battle, and equipped with 500-1000 beds, could cover a great deal of active work. Different small staff units could be detached from this and be detailed to points where the staff was overworked. Such small teams were mobile and could be added to or taken away from a unit. They should be equipped to do all kinds of surgery. A permanent orthopedic unit with detachable teams could be created under the supervision of a first-class orthopedic surgeon. A general surgeon could act as assistant and anesthetist. The orthopedic surgeon should be broad enough in spirit and ability to assist the general surgeon; when necessary, in chest and abdominal cases. In fractures and joint injuries the trained judgment of the orthopedic man was necessary in the first instance. The details of the kind of splint required and the problems of immobilization should be carried out under his supervision, though orderlies could be trained to do wonderful work, under proper direction. In forming her medical and surgical units the greatest care as to organization and detail was necessary. America must leave no stone unturned to offer the best surgical service to help the boys who were offering the supreme service of sacrifice.

DEMONSTRATION OF IMPORTANT SPLINTS APPLIED.

Captain W. J. Taylor, M.R.C., A.E.F. It was stated that the splints used by the British had been made haphazard without efforts at standardization. An attempt had been made to adapt them to men of any size, by various contrivances. Standardization would simplify procedures and aid transportation facilities. The splint should be quickly applied, before the man has a chance to move and to make a compound fracture. Appliances for the upper limb were shown—the elbow metal splint, the triangular bandage, the Thomas traction arm band. It was shown that the more simple the apparatus was, the better it was worked at the battle line. The forefoot splint and the Jones long leg splint were shown. In injuries of the tibia it was found of more comfort to the patient to have a side splint and a posterior splint together in use. A pad was placed under the Achilles tendon to support the foot. An improvised sling for the leg could be made by splitting the trouser on the upper side, turning back the flaps and pinning them round the bars of the stretcher, thus allowing the clothing to form a sling on which the injured limb rested.

THE CARREL-DAKIN TREATMENT AT OXFORD.

Captain John Dunlop, M.R.C., A.E.F., gave this paper. Old chronic suppurating war wounds, he stated, had been subjected to many treatments. Cases were selected for the Carrel-Dakin treatment which had failed to recover under other methods,—B.I.P.P., eusol, hypertonic salt and flavine. The cases were chiefly open fractures of the upper and lower limbs, a few flesh wounds, septic bone grafts and exacerbations of old septic scars. The cases were operated on afresh and Carrel tubes inserted. Great care was exercised to insure aseptic dressings. Behavior of wounds resembled that of fresh cases under similar treatment. The usual difficulties were encountered with the apparatus. No secondary sutures were attempted. Conclusions indicate that the method was successful,—wounds healed more quickly than is usually expected, dressings were painless and the general improvement in the patients' conditions was very marked. It was apparent that the infection was controlled from the beginning. At operation a thorough exploration of the wound area was made, and the first dressings were done under complete anesthesia.

HISTORY OF WOUND TREATMENT IN THREE AND A HALF YEARS OF WAR.

Major G. W. Harley gave this paper. He said the changes that were now taking place were revolutionary. More progress had been made in the past year than any since the war began. The difference between civil and military practice was not so well appreciated at first. Beneath an innocent-looking wound much traumatized tissue was often found. Total excision of all foreign bodies was essential. Effectual bacteriological control could be best effected by the Dakin hypochlorite solution combined with early operation. War operations appeared more like butchery than surgery. One surgeon had said it looked like the pathologists' work at a post mortem. To prevent osteomyelitis, the operation should be performed within 18 hours. It was said that in France alone there occurred 170,000 cases of osteomyelitis. This was the type of case which the orthopedic surgeon would have to treat.

THE TREATMENT OF CHRONIC OSTEOMYELITIS DUE TO GUNSHOT INJURIES.

This paper was given by CAPTAIN C. F. EIKENBARY, M.R.C., A.E.F. It was stated that sequestrae might be left and thus persisent sinuses be formed which would remain for years, and finally result in amputation. From a five months' experience at Bellahouston Hospital in Glasgow the author concluded that palliative operations in chronic osteomyelitis are of no avail. Treatment followed the lines of making a radical incision, including as much of the sinus as possible. Sequestrae were removed, together with much healthy bone, an inch above and below the diseased area. The chisel was slanted to leave a smooth-edged, shallow trough of healthy bone. This was packed with dry gauze, the skin held by one suture at either end. The aim of the operation in such cases is to: (1) get rid of all necrotic bone; (2) avoid leaving any cavity at all; (3) avoid leaving spicules, rough areas, etc. Post-operative improvement was successful, healing taking place within four weeks.

NOTES ON EXCISIONS OF SEPTIC JOINTS.

MAJOR ROBERT B. OSGOOD sent this paper. He stated that the use of the ankylosed joint depended mainly upon the angle of ankylosis. Two requisites in treatment were that the position of immobilization should be slightly exaggerated, and, second, that adequate drainage be provided. There should be some apparatus to prevent the patient lying on his wound. The removal of loose fragments was not advised as these might form a solid union. Anatomical considerations played a part in regard to the ankylosed joint. In some cases fair stability with motion could be obtained. In others flail joint occurred. Ankylosis was most favorable in shoulder, hip, knee and ankle. The one exception was the elbow, which was better flail than stiff, because it was not a weight-bearing joint. Fixation of joints was considered, and an angle of 70 degrees was stated as best for the shoulder; 110 for the elbow (if both elbows, one 110, the other 70 degrees). Jones favored putting the hip and the knee in extension, but other surgeons used slight flexion. The wrist was put in dorsal flexion; the ankle at right angles. The results of excision of joints were interesting. The excision of the knee, unless in the presence of sepsis, was encouraging; the excision of the ankle in children, successful; not so in adults. The writer considered merely the excision of joints for control of sepsis, not primary excision for other varieties of joint disease.

PRIMARY AND DELAYED PRIMARY SUTURE IN THE TREATMENT OF WAR FRACTURES.

This paper was presented by MAJOR WILLIAM S. BAER, M.R.C., A.E.F. American surgeons, he said, had arrived on the scene when the principles of general war surgery had been established. Since August, 1914, wonderful strides had been taken from the old painful, prolonged treatments to the present methods with the almost complete restoration of function. These hard and costly lessons had been learned by the Allies. The principles of war surgery so far established are: (1) all wounds are to be considered infected; (2) it is necessary to remove all projectiles, clothing and devitalized tissue, if possible, before the 12th hour after the injury; (3) when removed within this period such wounds can be considered aseptic in character and a primary suture made, thus converting compound fractures into simple fractures. In skillful hands primary suture could be performed (before the 12th hour) in 80 to 95% of the cases. When primary suture was not found possible, the so-called secondary suture, in which the wounds are closed on the second, third or fourth day, would be found successful in 80 to 87% of the cases.

THE PATHOLOGY OF THE PERIPHERAL NERVES IN GUNSHOT WOUNDS.

This was presented by CAPTAIN SYDNEY M. CONE, M.R.C., A.E.F. The report included observations upon two hundred cases of nerve injuries, both severed nerves and those involved in scar tissue. It dealt with the pathology of degenerating nerves, and stated that proliferation takes place at both proximal and distal ends, and that bulbous terminations of severed nerves are composed chiefly of actively growing nerve tendrils and comparatively little inactive tissue.

ORTHOPEDIC TREATMENT OF NERVE LESIONS.

This paper was presented by **MAJOR WILLIAM G. ERVING**, M.R.C. The problems of this subject, he said, were numerous and complicated. Each step was important, and the treatment might be divided into 3 groups: (*a*) supporting and protecting, (*b*) operative, (*c*) non-operative. In connection with the first, it was found necessary to have splints to overcome the defects produced by sensory nerve lesions, such as wrist-drop. To prevent stretching of muscles a light papiermaché model was used, and various other appliances were used to prevent contractions or malpositions of hand or foot. The manipulation of adjacent joints was necessary to prevent deformity. The operative treatment consisted of: (1) freeing muscles and tendons from scar tissue, (2) freeing nerves from scar tissue, (3) suture of divided nerves, (4) tendon transplantation, (5) arthrodesis. Non-operative treatment consisted of faradic stimulation, diathermy, hydrotherapy, massage, passive and active exercises, workshop training and mechanotherapy. The mind had to be trained to help to train the muscles. The proper sequence and coördination of these methods required the supervision of the patient by one surgeon throughout, who would take into consideration all the problems involved, and give to each step of the treatment its proper place in the general scheme.

DISCUSSION.

DR. TRUSLOW, Brooklyn, said he was interested in noticing in the introductory pages of Sir Robert Jones's "Surgery" that he had gained advantage in war orthopedic surgery by his previous experience in the treatment of paralytic tremors in children and other persons. In hearing the papers read he could see that they might find their experience in paralyses useful in the lessons they would have to learn. One could see that the methods of therapy would be applicable to war surgery nerve lesions.

At this time exhibition was made of a complete dissection of a human nervous system, from a man 5 feet, 7 inches, and weighing 240 pounds. Eighteen months' preservation in formalin and other preservatives had reduced it to about 2 feet in height. The dissection was made by Walter H. Wright, a student, who had spent two summers in the work. Every tissue had been sacrificed in the figure except the nervous tissue, and it was interesting to notice that the 7th nerve showed an anastomosis with the infraorbicular.

OPERATIVE TECHNIC IN CONTRACTURE OF THE HAND.

This was a lantern demonstration given by **MAJOR ALLEN B. KANAVEL**, M.R.C. (by invitation). One picture showed destruction of tendon with involvement of nerve and adhesions. In the treatment of this case there were difficulties. The lumbricoid muscles were bound down in scar tissue and had to be dissected without injury to the nerve supply. Owing to impairment of blood supply to the synovial sheath in injury, the sheath was apt to fill with fluid and pus and the nerve became damaged and lost its vitality. In injuries of the median nerve the annular ligament was an important structure. Injury to the ligament caused necrosis of the nerve. Increase of anemia in the parts hastened nerve destruction. In studying the relation of the nerves to the wrist joint, where the os magnum, the ensiform and the trapezium are destroyed, the removal of the distal row of bones is not sufficient. Care should be taken not to mistake the fibers of median nerve for the tendon. Cases had been found where the nerve ends had been sutured to the tendon by mistake. Great help could be obtained by following the nerve fibrils with a magnifying glass. A picture of the hand of a pianist was shown, in which restoration of function was complete after injury. Continuity of the nerve was restored, the nerve wrapped with a pad of fat, and the tendon sutured with silk.

DISCUSSION.

CAPTAIN LANGWORTHY, M.R.C., said that immobilization of wounds of the forearm and hand, and neglect of exercise, prevented men returning to duty on account of stiff hand. Gradual flexion would be found better than forced flexion under anesthesia. The use of a plaster bandage, 5 ins. wide and 5 yds. long, holding the wrist in dorsal flexion, would give absolute control of the joint and full extension of fingers, while only two weeks was required for treatment.

RE-EDUCATION IN THE FUNCTIONAL DISABILITIES OF ACTUAL WAR SERVICE.

Captain William W. Plummer, M.R.C., A.E.F., presented this paper. This was the result of experience in the 2nd National General Hospital, under Dr. W. C. Morton of Leeds, England. Cases were found to differ greatly in degree of disability, from slight incoordination to malposition or deformity. Fixed flexion of hands—equino varus—was very common. The disability might or might not be related to the wound, and the mental equipment of the patient did not always bear upon the case. Before re-education the history and conditions are carefully analyzed. The patient is convinced by demonstration that the wound is not responsible for the symptoms. The degree of functional disability is noted. Treatment was made to include passive and active exercise, faradism, voluntary efforts on the part of the patient. Individual treatment of the cases was insisted upon and encouragement given. The patient was allowed to feel his troubles were real and that no stigma was attached. The patients were not segregated and the general tone was good and spirits high. The men were never treated as malingerers. It was found that the true malingerer would always overdo the part. It was impossible to re-educate such a case. The re-education was given in private until the patient acquired confidence, and the idea of what his muscles should do was always held before him. Hypnotism was never used. Marked improvement was shown in apparently hopeless cases. In the 300 surgical beds only one malingerer was detected in four months. Naturally the personnel of such a department requires very careful selection. A civilian practitioner, rather than an officer in uniform, was found the best director. The recovered cases were never fit for war duties and should be detailed to other employment.

A SYSTEM OF ORTHOPEDIC INSTRUCTION.

This paper was presented by Major R. W. Lovett, M.R.C. Experience had shown that in the intensive training of military surgeons that teaching, to be effective, must be more fundamental. The work was seen from a new angle, and consisted of graduate instruction, pure and simple. Mistakes of the surgeon would not be shown on examination paper, but failures would be demonstrated on the soldiers in camp, therefore the training of the camp orthopedic surgeon must be fundamentally thorough. It was of no use to talk about a tuberculous joint to a man who did not understand what a joint was. The study of the normal joint must be undertaken before the study of joint disorder. The vulnerability of the joint and its reactions to trauma and irritants should be taught. All subjects allied to orthopedic surgery should be covered, and the instruction should be as largely clinical as possible. Points of instruction should cover: (1) diseases of the neuromuscular mechanism; (2) passage of the nervous impulse from the cortex down; (3) lesions in the synapse, in the brain cortex, after leaving the cortex; (4) muscular lesions and disturbances of motor function explained; (5) explanation of lesions in weakened muscles, and the relation of flexors and extensors (the former being stronger than the latter and more apt to cause deformity) being demonstrated; inhibition due to cerebral lesions is analyzed; (6) peripheral nerve lesions studied; thus covering all points of the neuromuscular mechanism. The second part of the course would deal with static deformities, and the causes of muscular depreciation, foot strain, scolioses, etc., would be considered. This study would include mechanical peculiarities of the different joints and results of toxic invasion of joints. Here would be considered the indications for operation on general pathological and functional grounds. Tuberculosis, arthritis and syphilis would be considered in this connection. Growth and function of bones and bone lesions would next be dealt with. The last part of the course should cover the question of apparatus and artificial appliance; the reasons for application of apparatus and the suitability of plaster, iron or leather being shown. Under this subject would be included: (1) fixation, (2) traction, (3) support, (4) correction of deformities. Students would work out for themselves the mechanical need of the apparatus. In this connection, rickets, as a cause of bone disturbance, would be dealt with, and the student taught that the ossification must be brought to normal by diet, hygiene, etc., in addition to treatment by supporting apparatus. In conclusion, Dr. Lovett said that the students responded extremely well to such an intensive course as outlined. The whole aim of the work was to use education in its real meaning, that is, "drawing out" instead of, as was so frequently done, "putting in."

DISCUSSION.

DR. JOHN PORTER, of Chicago, said he would like to attend a course of instruction by Major Lovett; he spoke feelingly because he was a teacher himself, and he was afraid it was almost an impossibility to compress into a few months anything like the amount of work that Major Lovett suggested.

THE CAMP GREENLEAF SCHOOL OF CLINICAL ORTHOPEDIC SURGERY.

This presentation was made by **MAJOR EMIL S. GEIST**, M.R.C. At present it was stated that 1000 doctors were in course of training at Camp Greenleaf. A course of four weeks is spent in intensive training, in subjects necessary for every medical military man. This includes drill, physical training, military hygiene, and orthopedic surgery. The chief points aimed at are: (1) making the army fit for service, (2) keeping it fit. The camp is near a large hospital where clinical material is easily accessible and the patients are soldiers. The chief difficulty was found in trying to get the civilian to adopt the military viewpoint. Osler had said that "if a man understands typhoid well he has the foundation for internal medicine," and it could also be said that if a man understands a tuberculous joint he has the foundation for orthopedic surgery. The main point was to avoid deformity, and the treatment of the tuberculous joint lent itself to this study. An outline of the day's studies at the camp was given: drill, 7.30 to 9 a.m.; the men begin school at nine. Courses include: anatomy—neurological and pathological, x-ray diagnosis, nerve surgery, history-taking and recording; a special course on foot ailments, as applied to the soldier, is given. The importance of the latter could not be overestimated. There was also a literature course, and the students were encouraged to abstract and discuss the best available literature on military orthopedic surgery. One important item of the training was the making of models of braces and apparatus, the simpler the better, and a great deal was done with simple wire models which the graduate was able to carry about with him so as to be ready to apply the instruction in the first emergency.

THE MOVING PICTURE AS A METHOD OF TEACHING, WITH SPECIAL REFERENCE TO POST-GRADUATE WORK.

MAJOR R. T. TAYLOR gave this presentation. The great need of illustration in post-graduate instruction having been felt, the Surgeon-General's Office had undertaken to equip a Medical Art Department of the Army Medical Museum. This would furnish a post-graduate research library of the highest value, and the work of the Government should be enthusiastically supported by the profession in order to make this work a treasury for all specialties. The Government had to meet great demands, coming from all the camps, for moving picture illustration. Colonel Owen was at the head of this work, and he had undertaken to supply the illustration of such subjects as war neuroses, tendon and muscular transplantation, intestinal anastomoses, application of deep sutures, etc. These subjects were brought home to the student and fixed in the memory better by illustration than by any other means. In combination with suitable lectures, this teaching gave a higher average for the students than any other method. The advantages of the film were that they could not be lost or broken, as was the case with slides. The technics of different surgeons in this and other countries could be compared. In order to facilitate the work of the Surgeon-General's Office, a guarantee of safe return of films should be made and also, in order to prevent commercial monopoly, physicians having films arranged, should stipulate with commercial firms that a copy be placed on file at the Surgeon-General's Office, for use in the Army Medical Schools. Many of these films took six months to prepare, on account of the necessity of careful attention to detail and technical points, and it was up to physicians to see that this work was not lost to the profession by commercial greed. Coöperation with the Surgeon-General was essential in order that the full benefit of this work might result.

THE PROBLEM OF THE CHRONIC DISABILITIES OF THE SOLDIER.

This paper was given by **CAPTAIN FRED J. FASSETT**, M.R.C., A.E.F. It was stated that the chief hindrance to successful orthopedic surgery was found in sepsis. The time for treatment of compound fractures was, therefore, before infection had set in, if not, modern orthopedic methods could do nothing in the way of restoration of function. In the military hospital the surgeon had to encounter a certain attitude of resistance among the patients. The men wanted nothing better than to be let alone.

This inertia was a psychic factor difficult to explain, but necessary to combat. It was the reaction after two or three years of abnormal trench life, and the wounded man had lost connection with the military side and had not yet reëstablished it with civilian life and duties. Mental readjustment would take time, and the men do little to help themselves. The inspiration must come from the doctors and nurses. Prolonged hospitalization was found to have a depressing moral effect, and a man unfit to return to military life should be at once put in relation with the outside world, and helped to find his new industrial station. An Out-Patient Annex Department could bridge over the gap and care for these patients in their new start in life. Without this help at the difficult point of readjustment, the returned soldier was apt to remain a moral as well as a physical cripple.

SOME ASPECTS OF THE MILITARY MASSAGE PROBLEM.

This paper was given by Miss Marguerite Sanderson (by invitation). This problem, the author said, was not so much a technical one as it was a question of administration. The types of cases to be treated were largely comparable to injuries in civil life, but the treatment was necessarily more intensive. A knowledge of anatomy was imperative and an individual study of each case was necessary, as the same lesion in two different patients could not always be treated alike. The patient's cure might be said to depend in a great measure on the moral force of the masseur or masseuse. Women of thorough and special training and with education and intelligence were needed for the work. The massage was coincident with re-education, and a knowledge of anatomy, physiology, and medical gymnastics was essential. The support of orthopedic surgeons was necessary to give the proper status to the kind of women needed for the work in the military hospitals. To keep the standard of the work high, the position should be made dignified and responsible, and proper compensation be allotted. This would be brought about by the influence and co-operation of the orthopedic men. At present there was a lack of proper coördination in the physico-therapeutic treatment in all its branches. To obtain the best results, all sides of the treatment should be considered in their relation to the whole, and all the workers should keep true to the vision of the returned soldier as a rehabilitated citizen.

ELECTRO- AND HYDROTHERAPY.

This presentation was made by Lieut.-Col. R. Wilson, R.A.M.C., Ottawa, Canada (by invitation). He said he would devote the time allotted to speaking of experience in England and France. The American Medical Reserve Corps seemed to be groping for information of all kinds which had a practical bearing on military questions. Therefore, though his remarks might be somewhat rambling, he hoped that some of the things they might gather would be helpful. Electro- and hydrotherapy were only two of the many methods used in the cure of wounded and disabled soldiers. It was necessary to ask two questions: (1) What are the conditions calling for physical remedial measures? (2) What remedial measures are best able to achieve the end in view? One must discover if the results justified the money expended on personnel and equipment necessary to give the treatments in the requisite manner to do most good. It was also necessary to consider what modifications a man might make for himself in applying these measures when used in private practice to adapt them to the large number of men who returned and who would not be reclaimed by the army. Colonel Wilson said that he believed in the Socratian method of asking questions and getting the men to answer them for themselves, as the working out of the problem would do more good than having the answers given. In England and France it had been found that the greatest interest attached to the nerve injury. It presented the most puzzling problems and those with which medical men were least acquainted. Next came injury to joint function, most important to the patient himself and second in interest to the orthopedic surgeon. Injuries by large loss of tissue and replacement by scar tissue needed special study, and, lastly, those various neuroses classed as "shell shock," doubtless because they had nothing to do with shells and very little with shock. Perhaps *fatigue neuroses* would be the better term. There were also cases of war nephritis, due purely to exposure, and different from nephritis of infections, known as "trench nephritis." Here one could ask what were the physical remedial measures to be employed in treatment. Colonel Wilson said that if he had to choose one method to the exclusion of any other, if he had to select one form of treatment and *nothing else,* he would choose treatment by a well-trained masseuse, who understood anatomy and physiological function. In regard to hydrotherapy,—in England there had been installed what were called "au courant baths," that is, those in which the water was kept continually in motion by means of nozzles of compressed air. This was similar to the "whirlpool bath," in which two nozzles forced the water in opposite directions. In the still bath there was always a layer of cooler water forming next the body, and the whirlpool bath did nothing more than to keep an even temperature round the limb. The addition of compressed air to the bath was supposed to keep up a certain definite massage of the limb by the pressure of air bubbles, but the speaker said he was not convinced that the results claimed justified the extra expense of this apparatus. Where water is scarce, however, it was cheaper than a continual flow of running water. In addition to hydrotherapy, massage was given, and this was thorough and specific in regard to the patient's disability. The treatment by the "au courant bath" cut down the time necessary for massage by one half, by relaxation of the muscles and loosening of the lymphatic circulation. When one came to the question of electrotherapy, one was upon debatable ground. There was great dispute among the authorities as to what effect electricty has upon the tissues. The effect was not really known. Lucas had devoted a great deal of time to the question and considerable experimentation. Colonel Wilson said he was inclined to agree with the results of Lucas and to say that the only effect obtained from nerve impulse and muscle response is generation of an electrical current. The amount of heat induced is so infinitesimal as not to be measurable. The nerve impulse travels 123 meters per second, and the electrical current simply equals a volitional impulse, and vice versa. In rabbits it had been found that those allowed to use their limbs regained function more rapidly, therefore the volitional impulse had a certain definite influence on the nerve fibrils. In treatment, Colonel Wilson said it was his custom to give a continuous current from above down for half the time, and then to stimulate the muscle by other means for half the time. In discussing the matter with Colonel Starr, the latter had said that it did not do harm, and might do good, and Colonel Wilson said he felt that it did good and did not do harm, so that they were both in perfect agreement on the matter. Colonel Wilson said he felt that the contraction of muscle depended upon the number of nerve fibrils supplying the muscle. In cases of partial paralysis, the symptoms were not due to the fact that the whole muscle contracted less, but that parts of the muscle did not contract at all. A common mistake was to suppose that a muscle severed from its nerve would respond to faradic stimulation. This was impossible. The properties of electricity were the same, no matter where obtained, whether 3000 volts or 20,000 volts, whether it goes backwards or forwards, up or down, the important point was the effect upon muscle tissue, the severed muscle tissue could not respond. With the nerve intact, the response would be to a current alternating as little as .008. In using the condenser there was a difference which pole was used. For treatment of a paralyzed muscle, in conjunction with massage, the galvanic current was used. It must be remembered that the weak muscle would not do as much as the strong muscle, and that nothing should be done to jerk suddenly the weak muscle. One must not insult a damaged muscle. The Wappler machine with the interpolated current was to be preferred to the use of the metronome. The electrician could adjust the wiring so that the cathode or the anode could be used, or the two alternating. This could be used for ionization treatment. In the treatment of ill-defined pains in war neurasthenia and neuroses, sodium salicylates could be given at the back of the neck or chlorides of sodium or potassium. With this was used 80 milliamperes of current for half an hour. For reduction of high blood pressure the high frequency current was used. Very often in war neuroses there was high blood pressure with associated kidney condition. Care should be exercised in this treatment, as a very rapid drop might occur with dangerous results. In one patient this had been as much as from 160 to 110. The man was found unconscious. The high frequency current caused diathermy, and its therapeutic effect was due to this occurrence. In advocating all these remedial measures one should not forget the education of the mind in the establishment of volitional power.

Upon the return of volitional power the electrotherapy should be dropped to a minimum. In Canada the use of schools of physicotherapy was found important. The medical man had to be taught first, in order that he might teach the people afterwards. The assistants in physicotherapy were being trained in such a manner that they could not leave the hospitals and claim to be graduates of any branch, and so impose upon the public. Masseuses and masseurs were allowed to do that work only. Certain men were trained to give the electric current only. The bath attendants were not allowed to give massage at all. Those teaching re-education of function did that and nothing else. Thus each assistant was put, as it were, into a water-tight compartment which entirely prevented the letting loose of half-baked practitioners who might do incalculable harm by a half knowledge of the subject. Many men were being put upon the work of devising apparatus, and it was being made impossible for manufacturers to get hold of these ideas and patent them. The Government held the ownership of all such apparatus and the distribution of such to all hospital centers. In conclusion Colonel Wilson said that they received numerous petitions from American physicians to come to Canadian military hospitals to learn; it would be utterly impossible to accept all that applied, and the only way was for applicants to enter as duly accredited delegates from the U. S. Government, in order to avoid being classed among those individuals who wanted to make a sort of Cook's tour of the hospitals for their own purposes. Such government credentials would ensure attention and avoid abuse of privilege.

(To be continued.)

Book Reviews.

Blood Transfusion, Hemorrhage and the Anaemias. By Bertram M. Bernheim, A.B., M.D., F.A.C.S., Instructor in Clinical Surgery, The Johns Hopkins University; Captain, Medical Officers' Reserve Corps, U. S. A. Philadelphia: J. B. Lippincott Co., 1918.

Owing to Dr. Bernheim's sudden departure for foreign war service, this book has been published without opportunity for the author's final inspection and revision. This is unfortunate, for upon reading the book, one is left with the impression that its 247 pages have been hastily put together. It is written in a rather colloquial style, and there are numerous rather detailed experiences with personal cases. Theoretical considerations have been purposely eliminated. As stated in the preface, "The book is meant for the man who is engaged in clinical work and desires to know concretely what is being done with transfusion, and how to do it." It serves this purpose fairly well, but is not so concrete and complete as one might expect it to be.

The Spleen and Anaemia. Experimental and Clinical Studies. By Richard Mills Pearce, M.D., Sc.D., Professor of Research Medicine; Edward Bell Krumbhaar, M.D., Ph.D., Asst. Prof. of Research Medicine; and Charles Harrison Frazier, M.D., Sc.D., Prof. of Clinical Surgery; University of Pennsylvania. Philadelphia: J. B. Lippincott Co., 1918.

With the interest that has developed in recent years in regard to splenectomy for various conditions, this volume is to be most definitely welcomed as a valuable contribution. The book is divided into three main parts. The first, by Dr. Pearce, deals with the experimental and metabolic study in animals and the relation of the spleen to blood destruction and regeneration, and to hemolytic jaundice. Metabolic changes in man, before and after splenectomy, are considered also. The second part, by Dr. Krumbhaar, is concerned with clinical studies of the splenomegalies that are especially associated with anemia and not with infections or leukemic states. The third part, by Dr. Frazier, takes up the surgical aspects of splenectomy. Much of the subject-matter of the book represents rewritten articles that have appeared in the last five years by the authors and their associates, especially Drs. J. H. Austin and J. H. Musser, Jr., and O. H. Perry Pepper. One is inclined to feel that there is relatively too much detail given in the first part, that occupies nearly two thirds of the book, especially when compared to the concise and satisfactory, but not wholly complete, observations of the second and third parts. A few errors have been found in the bibliography of 456 references; some references are possibly misquoted, while certain other references might have been added. Some of the 16 illustrations in the book might be rather better, especially that of the reticulated red cells, which is poor. However, one should overlook small defects, as the authors are all now in the service of the Government and undoubtedly had to complete the last details of publication hastily. The book should be found on the shelves of all medical libraries, and is valuable to any one who is interested in blood conditions.

Treatise on Fractures. By John B. Roberts, A.M., M.D., F.A.C.S., Professor of Surgery in the Philadelphia Polyclinic and College for Graduates in Medicine; Sometime Chairman of Fracture Committee of American Surgical Association; Membre de la Société Internationale de Chirurgie; and James A. Kelly, A.M., M.D., Attending Surgeon to St. Joseph's, St. Mary's, and St. Timothy's Hospitals; Associate in Surgery in the Philadelphia Polyclinic and College for Graduates in Medicine. With 909 illustrations, radiograms, drawings, and photographs. Philadelphia and London: J. B. Lippincott Company.

It is impossible to examine Roberts and Kelly's book on Fractures without comparing it with the book written by Speed, recently reviewed in these columns. Roberts' is the smaller book of the two, both in the number and the size of the pages. Roberts' is even more profusely illustrated, a very large proportion of the illustrations being half-tones of patients, lesions, or x-rays; comparatively few being tracings from plates. We referred to Speed's book as being essentially a Middle West production; Roberts' is just as obviously written from a Philadelphia viewpoint. Stimson of New York, Scudder, as well as Cotton, of Boston, Roberts of Philadelphia, and Speed of Chicago, give us together a series of volumes which accurately reflect the American conception of fractures and their treatment, as it exists east of the Mississippi.

Roberts' book contains the well-digested judgment of personal experience, as well as a summary of the views of others. The opinions expresed are unequivocal; the treatment suggested is definite and certain. It seems to be a book of very real value, both to students and to practitioners; to students because it is authoritative and dogmatic; to practitioners because the sometimes conflicting ideas of others are considered and given due, but not overdue, value. The attitude toward operative treatment is sound and reasonable, the comment upon suture of closed fracture of the patella on page 532 being an excellent example of an admirable viewpoint.

Pathological Lying, Accusation, and Swindling. By William Healy, A.B., M.D.; and Mary Tenney Healy, B.L. Boston: Little, Brown and Company.

Dr. Healy has had an exceptional opportunity for the study of a great variety of pathological mental conditions because of his connection with the Juvenile Court of Chicago, which makes him one of our foremost authorities upon such subjects. This book is another notable contribution of his to a portion of the field which has occupied him, and it should be widely read and studied by all who come in contact with the problems which continually arise in connection with sociological work. Instances where the problems of which this book treat, are of the greatest importance to many workers, judges, lawyers, sociologists, and charity workers, no less than to physicians. The importance of this book, too, is increased very much by the fact that comparatively little has been written in English upon this subject, the most important writings upon it being in foreign languages, and scattered in periodicals, many of which are comparatively inaccessible. Dr. Healy defines pathological lying very clearly, and well, in his introductory chapter, as falsification entirely disproportionate to any discernible end in view, engaged in by a person who at the time of observation cannot definitely be declared insane, feeble-minded or epileptic. Such lying rarely, if ever, centers about a single event; although exhibited in very occasional cases for a short time, it manifests itself most frequently by far over a period of years, or even a lifetime. The close relation to pathological lying of the pathological accusations and swindling makes their inclusion in this volume both natural and convenient. It is gratifying to find, too, that the author admits that in much of his experience in the work of the juvenile courts, the lying found is so intimately mixed up with other delinquencies or unfortunate sex experiences that the lying, after all, cannot be regarded as purposeless. As has been well said by one writer on psychopathology, the ignorant do not see the essential facts of pathological mental conditions, the half educated see too much, while only those with great experience and careful training can distinguish the real pathological examples from the misleading ones, and the same balance which the authors of this book show on almost every page, shows that their work is that of the true, trained expert who is fitted by both study and experience to guide others.

The exclusion from pathological lying of the cases in which this is merely an episode in a hysteric, imbecile or case of beginning insanity is justified, and the reasons made clear to the reader. Among the conclusions which are of the greatest interest to the physician, are those that these cases show a strong psychopathological hereditary taint; six cases of nineteen studied showing, for instance, insanity in the direct family, four of these being in a parent, while other forms of taint were also frequent, and in only two instances did reliable data show normal family stock.

If there is a lack in this book, it is only that one cannot help wishing, as the studies of the individual cases are given, that they might have been given much more in detail, though this condensation was undoubtedly necessary from the plan of this book, and the attempt to keep it within a reasonable size; and, considering these limitations, the task has been accomplished with wonderful success.

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VITAMINE BALANCING.

Much light has been thrown upon the nature of rational dietetics and the prevention of certain specific nutritional diseases by the study of vitamines. Not until recently was it very definitely understood not only that it is necessary to ration from the standpoint of the three food elements,—the proteins, the carbohydrates, and the fats,—but that there is another element of the food that must be considered of equal importance. For want of a better, more descriptive name, this vital food element is called "vitamine." It is quite possible to balance the ration and yet have a food that is, either intrinsically or through the mode of preparation, lacking in vitamines, and which will cause one or other of the specific nutritional diseases, such as beriberi, scorbutus, pellagra, rachitis, or some of the more general evidences of malnutrition. But even the presence of food rich in vitamine is not sufficient to anticipate nutritional disturbances unless the food is so mixed or balanced that there will be present a number of all the necessary vitamines. The body cannot get along with one vitamine any more than with one food element, no matter how much of it there is. While all food contains some vitamine, some foods are very poor in it, and if they form the chief articles of diet it can be seen that nutritional disturbances are bound to follow. Likewise, even though a food has sufficient vitamine, the latter may be destroyed by preparation or otherwise, and the same result follow as if the food were lacking in vitamine. Food vitamines vary in character, so that one vitamine cannot take the place of another, which may be lacking, by increasing the quantity of the first.

Of the non-food substances found to be rich in vitamine, yeast—brewer's yeast—seems to hold first place. In animals experimented upon by feeding them on food lacking in vitamine, and in whom neuritic symptoms were produced, suggestive of beriberi, by feeding them with yeast extract of brewer's waste extract, the condition was either prevented or cured. Brewer's waste freed from the vitamine made a good vitamine-free food with which to experiment. Yeast extracts have been used in a few instances as a therapeutic measure in infants in idiopathic malnutrition with varying success. The question of the adjustment of dosage must first be settled before any extensive work with human beings can be done. But it can be seen that the brewer's product—the beer—would be rich in these vitamines, and in a concentrated form. It is not impossible that hard workers who cannot, perhaps, afford the choice of food containing the vitamines, demand beer because it contains the vitamines in concentrated but cheap form. Since the question of the alcohol content of the average beer is negligible, it is, in all likelihood, not wise to withdraw the beer allowance from the laboring element who demand it.

The value of butter fat in butter, cream and milk, and the fat of cod liver oil in the treatment of rachitis is due to the presence of large quantities of anti-rachitic vitamines in them. It is for this reason that these forms of fats must be conserved for children when there is a fat shortage. The animal fats, the various margarines, are very low in this form of vitamine, and while they may and ought to be fed to adults, they are distinctly harmful to children.

The Lister Institute of London found that in respect to the prevention of beriberi, the embryo of the grain of the cereal was even richer in anti-beriberi vitamine than the cortex. When over-milled, according to modern milling methods, this destruction of vitamines had to be made up from other sources. There is waste, then, where none need have occurred. The appearance and the taste may be better in the over-milled or bleached product, but the food value is practically destroyed. The greatest anti-beriberi vitamine is contained in unmilled cereals and pulse, where the vitamines are concentrated and more or less uniformly distributed; and eating the whole product insures the greatest quantity of vitamine. Eggs, or egg preparations, contain many anti-beriberi vitamines, but it must be remembered that if raw egg-white is consumed, the vitamine is lost because the colloidal nature of the raw egg-white prevents its digestion; but when properly prepared, it is one of the most prolific sources of vitamine, but, of course, very expensive. While the cereals contain the anti-beriberi vitamine, they seem to lack another vitamine necessary to prevent another nutritional disease, namely, pellagra. Cereal products lack the anti-pellagra vitamine, and unless this deficiency is made up from other sources, pellagra must develop. In the South, the presence of so much pellagra seems to be due to the exclusive consumption of cereals, because they are cheaper than other foods. Yeasted flour contains much vitamine, but a great deal of it must be ascribed to the vitamine in the yeast. Meat and fresh vegetables contain moderate amounts of vitamine, but not in very concentrated form. In the case of meat, the consumption of large quantities is harmful to metabolism, from the over-ingestion of proteins, and yet the vitamine consumed is not proportionally beneficial.

The keeping powers of most vitamines are good. They can be heated to moderate degrees of temperature without harm. Some are more hardy than others. The anti-beriberi vitamine can be heated even up to 100° C. without harm. The anti-scorbutic and the anti-rachitic vitamines are more delicate in respect to heat. Canned foodstuffs that have been superheated in the canning process are usually lacking in vitamines because destroyed by the heat. Ordinarily, no matter what the food that is canned, it cannot prevent nutritional disturbances if the sole article of diet. It can be made only a small part of the dietary with safety. Some fresh food is always essential in the dietary, in order that nutritional processes may go on undisturbed. While citrous foods are strongly anti-scorbutic because containing much anti-scorbutic vitamine, the commercial preparations are valueless. Most fruit pulps are poor in vitamines. The anti-scorbutic vitamines soon disappear from food when kept at room temperature, but are preserved for a long time by refrigeration. In the same way, heating milk, even if only to the point of pasteurization, destroys the anti-scorbutic vitamines. Boiled, or even pasteurized, milk is not, therefore, a good diet for infants except as it renders the milk safe from pathogenic organisms. If raw milk could be consumed with safety it would be the best safeguard against scurvy or rachitis. Incidentally it may be noted that fresh cabbage is rich in anti-scorbutic vitamines. During germination of seeds the vitamines are most developed; they are present at this time when not present at other times. This fact has been taken advantage of in foods usually considered poor in vitamines.

In respect to war-time food conservation, it would seem that such food as contains much vitamine would be the subject for intensive cultivation or preparation, to the prejudice of others lacking in vitamines. But no such real distinction between the vitamines can be made, because they are all necessary. All of them seem to have a place in nutrition and to be active in the prevention of one or other form of nutritional disturbance. It is more rational to consume small quantities of food properly balanced as to ration and as to vitamine, because it is the mixture that is desired, and the minor vitamines play as important a rôle as the major ones. Hunger is more easily appeased by small quantities of mixed rations than by large quantities of unmixed or unbalanced diets. As a measure of conservation, it is highly essential to preserve the vitamines of the food by preventing over-milling or other forms of artificial preparation inimical to them.

THE WAR AND INTERNES IN SPECIAL HOSPITALS.

For two reasons the Department of the Surgeon-General of the Army has signified its desire to promote the education of internes in proper hospitals for as long a period as the exigencies of war will permit: Primarily, that the future military surgeon may begin his medical career with as much professional experience as possible; secondarily, so that the organization of hospitals for civilian treatment and for instruction of physicians and nurses may not be unnecessarily disrupted.

How far do these considerations apply to certain special hospitals, such as hospitals for women, children, consumptives, eye and ear cases, and insane, and what should be the policy of the Army with regard to internes in such institutions?

It seems clear that thorough education in all types of cases treated in the above, except maternity and children's hospitals, will have definite value for military purposes and that the same policy with regard to internes in these should be followed as in general hospitals. Probably the children's hospitals may be placed in the same category as the others, as the medical and surgical experience gained therein is such as to afford a substantial foundation for military service, and this, taken into consideration with the desire to preserve the hospital organization, should warrant the placing of children's hospitals on the same basis as general hospitals so far as interne service is concerned.

With hospitals for women the situation is very different. Service therein is intensive in a branch of medical science which has no direct relation to military needs, and therefore such hospitals cannot receive the same consideration as other hospitals as places of preparation for military service.

On the other hand, it would seem that in such hospitals the organizations could be properly maintained by the aid of personnel not fitted for army service. Not every medical student is eligible for active military service of the kind to be anticipated and desired by the young medical man who has at last reached the place in his career where he can be of great value to the country.

General hospitals should give first choice to those who are physically fit for the work in the Army and Navy, while young men who are not physically handicapped should equally seek interneships in hospitals where they can obtain the best possible training for military service. Those who, by reason of physical disqualifications, are not entitled to enter the country's service in its military branches should welcome the opportunity to aid in its general efficiency by engaging in other work essential to welfare.

Thus, by coöperation between hospitals, and between hospitals and student, can we come nearer a solution of the tremendous problem of making the supply of medical men meet the requirements of war.

With the use of women physicians, medical students and the proper allotment of student internes to places where they can be of the greatest use according to their qualifications, it would seem that an obvious difficulty may be at least minimized, and the authorities in medical schools can aid materially in advising their young men as to the proper course to pursue. Some men who have a special interest in obstetrics and gynecology may dislike to abandon the opportunity to specialize in such branches during the period of their interneship, and surely the country cannot afford to be without the services of men so especially educated; but the needs of our fighting men are immediate and imperative, and our young men will no doubt be willing to sacrifice their personal ambitions for a time, as many of the older men of the profession have already done.

The foregoing is the result of interviews with officers of the Surgeon-General's Department by a representative of the American Hospital Association. It has been submitted to them and is believed to represent fairly the policy of the Department with regard to internes in special hospitals.

* * *

FOUR-DAY PUBLIC HEALTH SCHOOL.

Much credit is due the Committee on Public Health of the Massachusetts Medical Society for the success of the Four-Day Public Health School which was held May 28-31. Over 225 people were in attendance, representing 61 towns and cities in Massachusetts, 7 other states and 2 foreign countries.

The entire program was presented as scheduled, without a change in speaker or in time, the average attendance at the sessions being about 60.

The session held at the Massachusetts Institute of Technology on Thursday evening had the largest attendance. Addresses delivered by Capt. Dr. René Sand of the Belgian Army and by Dr. W. W. Peter, director of Public Health Education in China, were most unique and highly appreciated.

The papers delivered at the various sessions were of a uniformly high quality, and to the speakers is due the appreciative gratitude of the organizations coöperating to make the School a success, and of the delegates in attendance.

Representatives of the coöperating agencies, namely, the State Department of Health, the Massachusetts Association of Boards of Health and the U. S. Public Health Service, took part in the program and furnished chairmen for some sessions. The three members of the Committee on Public Health having the immediate care of the arrangements are Dr. Enos H. Bigelow of Framingham, Dr. E. F. Cody of New Bedford and Dr. Annie Lee Hamilton of Boston.

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MASSACHUSETTS MEDICAL SOCIETY—ONE HUNDRED AND THIRTY-SEVENTH ANNIVERSARY.

The Massachusetts Medical Society will observe its 137th anniversary in Boston on Tuesday and Wednesday of next week, June 18 and 19. Attention is directed to the complete program of exercises which appears in another column of this issue of the Journal. Conditions associated with the war will make the sessions this year of unusual interest. Many more members of the Society are absent in the active service of their country than was the case a year ago, and their example will be felt as an inspiration by all who must remain to carry on the work at home. It has wisely and fittingly been decided not to hold the annual dinner this year. Complete report of all the sessions and the entire text of papers presented will appear in successive issues of the Journal during the summer.

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REPORTING OF GONORRHEA AND SYPHILIS.

At a meeting of the Public Health Council, held May 21st, the following regulation was adopted as an addition to the Regulations Governing the Reporting of Gonorrhea and Syphilis.

"*Regulation* 9. Whenever, in the opinion of the physician reporting the case, because of circumstances or conditions present, the protection of the public health demands immediate action by the local board of health, he shall forthwith report the facts as prescribed in Regulation 7 to the State Department of Health, which shall, in turn, proceed as prescribed in Regulation 8."

By direction of the Commissioner of Health,

John S. Hitchcock,

Director of Division of Communicable Diseases

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MEDICAL NOTES.

Progress of Venereal Disease Control.—The United States Public Health Report for May 24, 1918, contains an article on the progress of venereal disease control; it explains the organization of the work which has been done and the regulations which have been adopted by different states. The report contains, also, tables showing the prevalence of malaria in certain states, the prevalence of diseases both in the extra-cantonment zones and among the troops in the United States, and state summaries and foreign reports.

Trudeau Sanatorium.—The thirty-third annual medical report of Trudeau Sanatorium, New York, has been submitted for the year 1917. During the past year, two sessions of the Trudeau School of Tuberculosis have been held. The medical report shows that more patients were treated, they remained a shorter time in the Sanatorium, and the immediate results were much better than in previous years. Many medical problems have been studied, including the effect of typhoid fever and its vaccine upon tuberculous patients. The research and clinical laboratories have been very active and many complement-fixation tests have been made. The work of the x-ray department has progressed favorably. In the D. Ogden Mills Training School of Nurses, the lecture courses have been re-systematized. Every week, there has been held a diagnosis conference of the medical and nursing staff; these have been of great value both to the staff and to the students. The re port includes the thirteenth medical supplement, and the following studies: "Serological Studies in Tuberculosis," "Prognosis in Tuberculosis from the Standpoint of the Occurrence of Hemoptysis and Tubercle Bacilli in the Sputum," "The Pleural Reaction to Inoculation with Tubercle Bacilli in Vaccinated and Normal Guinea Pigs," and "Experimental Tuberculosis of the Liver."

Five Thousand Army Nurses Wanted.—Special committees to recruit 5000 trained nurses, sorely needed in the Army, are being organized in all the cities within jurisdiction of the Atlantic division of the American Red Cross. The campaign will begin on June 3, and will be continued ten days. While the immediate goal is 5000 nurses, it will be necessary to have 10,000 available before January 1, 1919, from the Atlantic division alone.

The Red Cross will seek to impress upon the public the fact that services of nurses should not be used in private cases, except cases of life and death. Doctors, too, will be urged to dispense with nurses so far as possible. Those who are married and not actively engaged in their profession or otherwise ineligible for war service, will be asked to become "home defense nurses." These nurses will be assigned for a few hours daily to work in baby-saving stations, in hospitals, or in private families where the need is urgent.

Bubonic Plague on Steamship "Somali."—When the steamship *Somali* arrived at Gravesend on May 30, from Bombay, it was found that three members of the crew were suffering symptoms suggesting the bubonic plague. Two cases, one of which ended fatally, proved to be the plague. During the voyage several rats were killed in the storeroom. The ship is now moored off Gravesend. It will be disinfected and all the rats on board will be killed.

WAR NOTES.

American Physician Honored.—Lieutenant J. T. McCarthy, attached to an Essex regiment, one of the first American doctors serving in France, has been awarded the British military cross.

Medical Appointments.—The following appointments in the Medical Reserve Corps have been announced: First lieutenants: William E. Gallagher, Camp Devens; Robert M. Lord, Children's Hospital, Boston; and Carl C. Persons, St. Luke's Hospital, New Bedford.

Twelve Americans Honored.—The British military cross has been awarded twelve Americans of the United States Army Medical Service: Captain Thomas Walker, and Lieutenants Linwood M. Gable, Arthur I. Haskell, James B. Clinton, Samuel Adams, Gouverneur Boyer, Harold Foster, John Gregg, Albert I. L. Jones, Baldwin L. Keyes, Guy D. Tibbetts, and Harvey C. Updegrove.

Bay State Nurses Called.—Surgeon-General Gorgas has sent an urgent request to the American Red Cross for 1000 trained nurses. These nurses must be enrolled and on duty by the middle of June.

They will be used in the hospital service of the United States both at home and abroad.

As soon as this quota is filled, 24,000 more must be enrolled by the end of the year.

Application can be made to local Red Cross chapters and to the Nursing Department of the New England Division headquarters, 755 Boylston Street, Boston. Massachusetts is expected to supply 387 of the first 1000, and 1580 of the next 24,000.

Army Health Conditions.—Health conditions among the soldiers in divisional camps and cantonments are better now than at any time since last November. There has been a marked decrease in the death rate, a rapid falling off in the number of pneumonia cases and fewer cases of measles. The death rate for the week ending May 24 was 1.90 in the divisional camps. This group has, also, the lowest sick rates.

Sickness in German Army.—It is reported from Amsterdam, in a message of April 24, that, according to a Berlin telegram, Surgeon-General Schultzen, speaking in the Main Committee of the Reichstag on the health of the German Army, said:

"The general state of health of the troops is very good. The rumors regarding the increase of venereal diseases are exaggerated. In the field army the number of cases remains some percentage points lower than in the last five years of peace. They have further decreased in the past year, as also in the home army, where they are slightly higher than in peace time.

"We have discharged something over 37,000 men on account of tuberculosis, whereas the French discharged 88,000 in the same period.

"About 90 per cent. of those discharged from the hospitals are fit for further military service, and 70 per cent. for service at the front. About 1 per cent. of those discharged have died. Suicides in the army have considerably decreased. As compared with the first year of the war, cases of sickness have declined 35.5 per cent."

Tuberculosis in German Prison Camps.—The Rockefeller Foundation has been invstigating the reason for the spread of tuberculosis among the captured Allied soldiers in German prison camps. Dr. Livingston Farrand, who, for a year has been director of the Rockefeller Foundation Tuberculosis Commission to France, believes that this condition is due to overcrowding and not to a deliberate attempt of the Germans to spread germs among the soldier prisoners.

George M. Vincent, president of the Rockefeller Foundation, who has spent two months inspecting its work in England, France and Italy, has reported that the Foundation's medical staff in France, headed by Dr. Selskar Gunn of the Massachusetts Institute of Technology, is making rapid progress in teaching French doctors and nurses how to take up the fight against tuberculosis. The American Red Cross is cooperating with the Foundation.

War Relief Funds.—On June 4, the totals of the principal New England War Relief funds reached the following amounts:

Belgian Fund	$679,260.39
French Orphanage Fund ..	367,395.37
Syrian-Armenian Fund ..	306,418.67
Italian Fund	174,391.90
La Fayette Fund	39,068.23

Grippe Epidemic in Spain.—Apparently Spain is in the midst of an epidemic which is spreading rapidly. The exact nature of the disease has not been determined; it is not, however, fatal. Reports from the provinces show that 30% of the population is affected. Business life in Madrid is almost paralyzed; theatres and moving picture houses are deserted; tramways have reduced their service by two-thirds bcause of illness of employees.

King Alfonso and many other prominent persons, including the President of the Chamber of Deputies, the Ministers of Finance, Marine, and Public Instruction, and the Under Secretary to the President, are suffering from the disease. In Madrid there are more than 150,000 persons afflicted and there are many victims in Barcelona, Sargossa, and other provinces. The malady extends to the Canary Islands. Several regiments are almost entirely on the sick roll and the military authorities have suspended all manoeuvres. The mortality continues low. The fact that more than six hundred doctors are suffering from the disease hampers an efficacious fight against the epidemic.

Extra precautions have been taken along the French frontier to prevent the spread of the Spanish epidemic into France. Apparently the disease is influenzal in character.

Maj. Harvey Cushing Honored.—Major Harvey Cushing of the United States Army Medical Service, has received an honorary fellowship from the Royal College of Surgeons of Ireland at Dublin. Major Cushing, thanking the college, is reported to have said:

"America is in the war 'with both feet,' and has made the discovery that Germany is an insane nation. There was some delay, due largely to the fact that the United States has a very mixed population and that, while Americans of 100% were wanted, there were, in the beginning, many who graded from 50% upward. But now, like its neighbor Canada, America is in the war as a united country.

"You here in this beautiful land are next to us, and we expect you to be in as a country and you certainly will. I know the Irish. There are more Irish in America than here: more, I think, in Boston than in Ireland, and it is true that the Irish, wherever they are, are on the top. If there is any trouble, if anyone needs support or counsel, he is sure to find an Irishman on his right or left hand. I know what Ireland already has done in the war. Nothing has been finer than the work of the men from Dublin and Munster in Gallipoli. All last summer I was behind the army in which the southern and northern divisions were fighting side by side and nothing better was done than the work of these soldiers. The time is coming when there will be universal military service in every country, thus making for a sense of devotion to one's country which comes only from giving service to it."

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending June 1, 1918, the number of deaths reported was 188, against 271 last year, with a rate of 12.49, against 18.30 last year. There were 33 deaths under one year of age, against 42 last year.

The number of cases of principal reportable diseases were: diphtheria, 47; scarlet fever, 25; measles, 269; whooping cough, 44; typhoid fever, 1; tuberculosis, 57.

Included in the above were the following cases of non-residents: diphtheria, 17; scarlet fever, 3; measles, 5; tuberculosis, 11.

Total deaths from these diseases were: diphtheria, 4; measles, 5; whooping cough, 6; tuberculosis, 19.

Included in the above were the following non-residents: diphtheria, 1; tuberculosis, 1.

Cambridge Hospital Nurses' Home.—The new nurses' home at the Cambridge Hospital was opened to visitors for inspection on June 4.

Graduation Exercises of the Boston City Hospital Training School for Nurses.—Before a large audience composed of friends of the class and officials of the City Hospital, the 39th annual graduation exercises of the Training School for Nurses were held May 31. Thirty-five members were awarded diplomas. The total number of graduates now is 1300.

Addresses were made by Dr. George W. Gay, senior surgeon, Dr. George C. Sears of the Hospital Staff, and Mayor Peters. Dr. Gay made a plea for nurses for Government service, saying that the demand was for fifty thousand, while the available supply comprised only the forty thousand in the training schools of the country. Dr. Sears made a comparison of the nurses of today with those of thirty years ago. He also presented the diplomas. Mayor Peters spoke of the demand for the woman power as well as the man power of the nation. He lauded the work of Base Hospital Unit No. 7, organized at the City Hospital and now in national service.

A prize of $10 in gold, offered by Miss Anna Gibson of the class of 1917, for the best standing in laboratory technic, was awarded to Miss Winifred Helen Macomber.

Memorial Hospital for Dedham.—George H. French has left the residue of his estate, amounting to several thousand dollars, to the town of Dedham, Mass., for the purpose of establishing the Olive Cheney French and George H. French Memorial Hospital Fund. The town will use the interest of the principal for immediate hospital purposes.

Scarlet Fever Epidemic Closes Schools of Hardwick.—Five cases of scarlet fever have been reported in Hardwick, Mass. The State Board of Health has ordered that all schools be closed.

Effect of Freezing on the Organisms of Typhoid Fever and Diphtheria.—The outbreak of diphtheria and typhoid fever during the summer of 1917 led to experiments by the Massachusetts State Department of Health on infected ice cream, to determine whether typhoid bacillus and diphtheria bacterium would survive freezing. In both cases, the organisms were found to survive freezing, and there is no doubt that ice cream is a very effective agent for distributing infection.

Infants' Hospital.—The Infants' Hospital has submitted its 35th annual report, for the year 1917. During the year, the Hospital has cared for 728 babies. Thirty nurses have received their diplomas and 78 nursery maids have finished a course of instruction. The work of the Social Service Department has been of great value in investigating and improving the conditions in homes. Many members of the medical staff have been called to active service in Europe.

Tuberculosis Hospital. — The Middlesex County Commissioners have voted to postpone until after the war the erection of the Middlesex County Tuberculosis Hospital in Waltham. The action was in accordance with the expressed wishes of the Capital Issues Committee of the Federal Reserve Board, Washington, which declared in favor of postponement on the ground that funds, labor, and materials should be conserved. The cost of the hospital has been estimated at $550,000.

Hospital Efficiency Methods.—Dr. John G. Bowman, executive director of the American College of Surgeons, and Rev. Charles B. Moulinier, president of the Catholic Hospital Association and chancellor of Marquette Medical

School of Milwaukee, are in Boston in the course of a tour of the country inculcating the methods and ideas of the American College of Surgeons, an organization composed of four thousand surgeons of the United States and Canada. The organization desires that hospitals practise efficiency methods used in the business world. The plan is that every hospital have a complete record of every surgical case, and that at regular intervals the staff of each hospital meet and go over the cases. The Association corresponds to the Royal College of Surgeons of England. The officers are: William J. Mayo, Minn., president; Rudolph Matas, New Orleans, first vice-president; Charles E. Kahle, Chicago, second vice-president; Franklin H. Martin, Chicago, secretary-general; John G. Bowman, Chicago, director; Albert J. Ochsner, Chicago, treasurer.

NEW ENGLAND NOTES.

Medical Referees of New Hampshire.—The following medical referees have been appointed in New Hampshire.

For Grafton County, Dr. John Wheeler of Plymouth, Dr. Lawrence of Haverhill, and Dr. Frederick von Tobel of Lebanon; for Merrimac County, Dr. Loren A. Sanders of Concord.

Rev. Frederick John J. Brophy of Penacook has been appointed to succeed Major James F. Brennan of Peterboro on the State Board of Charities and Correction, and Dr. Fred E. Clow of Wolfeboro has been appointed to the State Board of Registration in Medicine.

Dr. Drummond Appointed to Maine Health Council.—Dr. Joseph B. Drummond of Portland has been nominated a member of the Public Health Council for four years, and also a member of the State Board for Regulating the Practice of Embalming.

Putnam Memorial Hospital.—The Henry W. Putnam Memorial Hospital was formally opened on May 30 at Bennington, Vt. On June 10, the hospital will be ready to receive patients. Henry W. Putnam of San Diego, Calif., a former resident, gave to the village the Bennington waterworks for the purpose of building and endowing the hospital. In April, 1916, Henry W. Putnam of New York, son of the founder of the association, made the organization a gift of $90,000.

The building has a frontage of 188 feet, with a central wing 98 feet in length. When all the facilities of the building are available, it will be a fifty-bed institution. At the present time, the nurses and officials will be quartered in the building and the number of private rooms will be limited. Plans have been secured for a nurses' home to be built on the grounds, but construction will be delayed because of the war.

Venereal Disease Reporting.—The importance of reporting cases of venereal diseases is becoming recognized. In the April bulletin issued by the Massachusetts Society for Social Hygiene, the following article appears:

"Vermont is the first State to pass a law requiring that all cases of venereal diseases shall be reported by name direct to the State Board of Health. This law went into effect in 1915. New Jersey passed a similar law in 1917.

For years strenuous objections to the advisability of reporting venereal diseases have been quite general.

The last Report of the Royal Commission on Venereal Diseases considered these objections had some weight, but concluded that with the extension of popular knowledge it is possible that notification in some form will be demanded.

The confidential relation between patient and physician must be maintained, but society is as much entitled to a knowledge of the prevalence of the infectious diseases, syphilis and gonorrhea, as the other infectious diseases.

On December 18, 1917, the Public Health Council of the State Department of Health voted to add syphilis and gonorrhea to the list of diseases declared dangerous to the public health.

In 1915 the State of West Australia passed a statute on the notification of venereal diseases, and on this scheme as a basis the Massachusetts State Department of Health passed the following regulations governing the method of reporting gonorrhea and syphilis:

1. At the first visit the physician shall furnish to each patient treated or examined a numbered circular of information and advice.

2. The physician shall at this time fill out a numbered report blank attached to the circular of advice to be mailed to the State Department of Health.

The following facts are reported: Name of disease, age, sex, color, civil state, occupation, duration of disease and degree of infectiousness. The name and address of the patient shall not be given.

3. When a patient with syphilis or gonorrhea in an infectious stage, applies to a physician for treatment, the physician shall ascertain whether the patient has received a numbered circular of advice; if not, the physician shall give him one and report the case to the State Health Department. If he has received a circular from another physician within the State, the last physician shall not report the case to the Health Department, but he shall ascertain the name and address of the first physician and notify him of the patient's change of medical adviser.

When a patient with gonorrhea or syphilis in an infectious stage fails to return to the treating physician for a period of six weeks later than the appointed time for treatment and the treating physician receives no notification of a change of physicians, he shall notify the State Department of Health, giving name and address of the patient, disease and serial number, date of report and name of physician who originally reported the case. On receipt of this report, the Department of Health will report the case, name and address to the Board of Health of the city or town of the patient's last address, as a person dangerous to the public. The name of the physician making this report shall not be given by the State Department of Health.

The Massachusetts Medical Society

PROGRAM OF THE ONE HUNDRED AND THIRTY-SEVENTH ANNIVERSARY.

ALL of the exercises of the anniversary will be held on Tuesday and Wednesday, June 18 and 19, 1918, at the Boston Medical Library, 8 The Fenway. Following is the entire body of the program:

GENERAL INFORMATION.

A BUREAU OF INFORMATION will be maintained by the Committee of Arrangements during Tuesday and Wednesday in the lobby of the Boston Medical Library, the headquarters of the Society.

ALL FELLOWS ARE REQUESTED TO REGISTER as early as possible at the Bureau of Information.

ALL GENERAL AND SECTION MEETINGS will be held at the Boston Medical Library. Parking space for automobiles, with supervision, will be provided. Inquire of the police officer in charge. The new elevator in the main hallway has been installed, and will be running.

By vote of the Council, February 6, 1918, the Annual Dinner will be omitted this year, because of war conditions.

The Boston Medical Library, 8 The Fenway, will be open for the inspection and use of the Fellows during the days of the meetings. An exhibit of early printed books and articles of interest to Fellows will be held in Holmes Hall.

The Harvard Medical School, 240 Longwood Avenue, and the Tufts College Medical School, 416 Huntington Avenue, will be open for inspection by the Fellows both Tuesday and Wednesday.

JUNE 18, 1918.

TUESDAY MORNING.

There will be clinics and operations on the surgical services, and ward visits on the medical services, at the following hospitals:

THE BOSTON CITY HOSPITAL.

Operations in the Surgical Amphitheatre and in the smaller operating rooms on the Surgical Floor, beginning at 10 o'clock.

Operations in the Gynecological Operating Rooms on Ward S and Ward H, by members of the Gynecological Staff, beginning at 10 o'clock.

Exhibition of cases on the Medical Wards, by members of the Medical Staff, beginning at 9.30.

BOSTON LYING-IN HOSPITAL.

Ward Visit at 10.30 a.m. Operations depending on material in hospital at the time.—Drs. J. B. Swift and H. V. Hyde.

Demonstration of Gas-Oxygen Anesthesia for Prenatal Examination, at 10.30 a.m.—Dr. R. S. Titus.

Regular Morning Prenatal Clinic at 4 McLean Street.—Dr. J. L. Huntington.

CARNEY HOSPITAL.

9-12. Operations will be performed by the Surgical Service, and a Medical Clinic will be held in the wards.

CHILDREN'S HOSPITAL.

9.30-10.00. Dr. Robert W. Lovett will demonstrate the Orthopedic Splints, and other apparatus in use in the United States Army.

10.30-11.30. Dr. John Lovett Morse.—A Visit in the Medical Wards.

11.30-12.30. Dr. W. E. Ladd.—Surgical Clinic in the Amphitheatre.

FREE HOSPITAL FOR WOMEN.

ROOM 1.

7.15 A.M. Dr. W. P. Graves.
Plastic and Coeliotomy for Prolapse.
Hysterectomy for Fibroid.
Coeliotomy for Retroversion.
Repair of Complete Laceration of Perineum.
Radium Application for Uterine Hemorrhage.

ROOM 2.

7.30 A.M. Dr. R. G. Wadsworth.
Plastic and Coeliotomy for Retroversion.

9.00 A.M. Dr. F. A. Pemberton.
Plastic and Coeliotomy for Prolapse.
Hysterectomy for Fibroid.
Coeliotomy for Retroversion.

INFANTS' HOSPITAL.

10.00 A.M. Chest Examination in Infancy, illustrated by cases and x-ray.

MASSACHUSETTS GENERAL HOSPITAL.

BIGELOW SURGICAL AMPHITHEATRE.
10.30 A.M.-11.30 A.M.

1. Demonstrations of Proteid Skin Reactions.—Dr. J. L. Goodale, Dr. John Turnbull.
2. Pernicious Anemia.—Dr. George R. Minot.
3. New Problems in the Old Field of Syphilis.—Dr. C. Morton Smith.
4. Remarks on X-ray Therapy.—Dr. G. W. Holmes.
5. Treatment of Splenic Anemia by Transfusion.—Dr. R. D. Curtis.

11.30 A.M.-1.00 P.M.
OPERATIONS BY THE SURGICAL STAFF.

PETER BENT BRIGHAM HOSPITAL.

10-12 A.M. Medical Service: Ward visits.—Dr. H. A. Christian.
9-12 A.M. Surgical Service: Operations in Surgical Building.—Drs. David Cheever and W. C. Quinby.

PSYCHOPATHIC HOSPITAL.

Members of the Society will be taken through the wards of the Psychopathic Hospital in small groups. A special clinic will be given in the Assembly Room for members of the Society at 10.30 a.m. Examples of major groups of mental disease will be briefly demonstrated, including cases.

The laboratories will be open for inspection, and charts, illustrative of the work of the hospital and of the Commission on Mental Diseases, will be on display.

ROBERT B. BRIGHAM HOSPITAL.

11 A.M. Dr. C. F. Painter will demonstrate cases illustrating the Treatment of Deformities Due to Chronic Arthritis, with emphasis on functional results.
Dr. C. H. Lawrence will speak on the question of Focal Infection in Chronic Arthritis.

ANNUAL MEETING OF THE SUPERVISORS.

BOSTON MEDICAL LIBRARY.
JOHN WARE HALL.
11.30 O'CLOCK.

TUESDAY NOON.

ANNUAL MEETING OF THE COUNCIL.
BOSTON MEDICAL LIBRARY.
JOHN WARE HALL.

TUESDAY AFTERNOON.

MEETING OF THE SECTION OF MEDICINE.
BOSTON MEDICAL LIBRARY.
SPRAGUE HALL.
2.30 O'CLOCK.

Officers of the Section of Medicine:
DR. WILLIAM H. SMITH, Boston, *Chairman.*
DR. GEORGE R. MINOT, Boston, *Secretary.*

1. The Relation of Food Idiosyncrasies to the Diseases of Childhood.—Dr. Fritz B. Talbot, Boston.
2. A Clinical Study of Four Hundred Patients with Bronchial Asthma.—Dr. I. C. Walker, Boston.
3. The Present Status of Immunization in Hay Fever.—Dr. J. L. Goodale, Boston.

(Lieut. Francis M. Rackemann, M.R.C., Boston, will also present a paper on Asthma, if military duties permit.)

The discussion of these papers will be opened by Dr. David L. Edsall, Boston.

4. The Pathogenicity of Non-hemolytic Streptococci.—Dr. S. Burt Wolbach, Boston.

TUESDAY AFTERNOON.

MEETING OF THE SECTION OF SURGERY.
BOSTON MEDICAL LIBRARY.
JOHN WARE HALL.
2.30 O'CLOCK.

Officers of the Section of Surgery:
DR. JOHN HOMANS, Brookline, *Chairman.*
DR. HILBERT F. DAY, Boston, *Secretary.*

1. Suspension and Traction Treatment of Fractures in Base Hospital Work and the Application of This Method in Civil Practice.—Dr. George A. Moore, Brockton.
2. Tetanus in the War: Progress in Prevention and Treatment.—Dr. C. A. Porter, Boston.
3. Some Observations on War Surgery in France.—Dr. W. Irving Clark, Worcester.
4. Discussion of Empyema and Its Treatment in Military Cantonments during the Winter of 1917-1918.—Major Homer Gage, M.R.C., Worcester.
5. Moving Pictures of the Application of Standard Splints in Trench and Front Line Dressings, with Discussion.—Major Kendall Emerson, M.R.C., Worcester.

TUESDAY AFTERNOON.

MEETING OF THE SECTION OF TUBERCULOSIS.
BOSTON MEDICAL LIBRARY.
REAR UPPER HALL.
2.30 O'CLOCK.

Officers of the Section of Tuberculosis:
DR. WALTER G. PHIPPEN, Salem, *Chairman.*
DR. JOHN B. HAWES, 2d, Boston, *Secretary.*

SYMPOSIUM ON THE MASSACHUSETTS PLAN FOR CARING FOR CONSUMPTIVES.

1. The State Tuberculosis Sanatoria, and What They Aim to Do.—Dr. Arthur K. Stone, Framingham Centre, Chairman Board of Trustees, Mass. Hospitals for Consumptives.
   Discussion by Dr. W. P. Bowers, Clinton; Dr. E. R. Kelley, Boston; Dr. E. B. Emerson, Rutland.
2. County Tuberculosis Hospitals.—Dr. Olin S. Pettingill, Supt. Essex County Sanatorium.
   Discussion by Dr. B. H. Peirce, Cambridge; Dr. A. J. Roach, Tewksbury; Dr. A. S. MacKnight, Fall River.
3. Local Municipal Tuberculosis Hospitals.—Dr. Edwin A. Locke, Chief of Staff, Boston Consumptives' Hospital.
   Discussion by Dr. P. C. Devlin, Lynn; Dr. R. A. Rice, Fitchburg; Dr. R. W. Hastings, Brookline.

4. The Dispensary System and Follow-up Work.—Dr. John S. Hitchcock, Northampton, Director Division of Communicable Diseases, State Department of Health.
   Discussion by Dr. E. O. Otis, Boston; Dr. G. A. Buckley, Brockton; Dr. S. Hoberman, Malden.

TUESDAY EVENING.

The Shattuck Lecture.
Boston Medical Library.
John Ware Hall.
8 o'clock.

By **Dr. E. E. Southard**, Cambridge, Professor of Neuropathology, Harvard Medical School.
Subject: Shell-Shock and After.

After the lecture, light refreshments will be served in the Supper Room.

June 19, 1918.

WEDNESDAY MORNING.

One Hundred and Thirty-Seventh Anniversary.
Boston Medical Library.
John Ware Hall.
9.30 o'clock.

*Business of the Annual Meeting.**

The papers will be devoted to "Certain Aspects of Reconstruction Work in Connection with the War."

Col. E. G. Brackett, M.C., N.A.
Major A. B. Kanavel, M.R.C.
Major H. E. Mock, M.R.C.
Major H. D. Jump, M.R.C.

It is expected that Sir William Arbuthnot Lane, consulting surgeon to Guy's Hospital, Sir James Mackenzie, physician to the London Hospital, and Col. Herbert A. Bruce, consulting surgeon of the British Armies in France, now in this country, will be present and will address the meeting.

WEDNESDAY NOON.

Boston Medical Library.
John Ware Hall.

The Annual Discourse will be delivered by **Dr. Myles Standish**, Boston.
Subject: "The Socialization of the Practice of Medicine."

WEDNESDAY AFTERNOON.

Meeting of the Section of Hospital Administration.
Boston Medical Library.
Sprague Hall.
2.30 o'clock.

Officers of the Section of Hospital Administration:
Dr. Homer Gage, Worcester, *Chairman.*
Dr. Channing C. Simmons, Boston, *Secretary.*

1. Hospital Standardization: What It Means.—Dr. John T. Bottomley, Boston.
2. The Administration of a Military Base Hospital and Its Comparison with a Civil Hospital.—Lieut. Col. Channing Frothingham, M.C., N.A.
   Discussion opened by R. B. Greenough, Surgeon, U.S.N.R.F.
3. The Need of Systematic Teaching of Hospital Internes.—Dr. E. H. Bradford, Boston.
   Discussion opened by Dr. C. A. Porter, Boston.
4. Case Histories in Municipal, County, and Other Hospitals of Less Than One Hundred Beds.—Miss Mary Riddle, Supt. Newton Hospital.
   Discussion opened by Dr. W. P. Bowers, Clinton.
5. Social Service and Follow-up Work.—Dr. Richard M. Smith, Boston.
   Discussion opened by Mr. Michael M. Davis, Jr., Supt. Boston Dispensary.

WEDNESDAY AFTERNOON.

Combined Meeting of the Sections of Medicine and Surgery.
Boston Medical Library.
John Ware Hall.
2.30 o'clock.

Chairmen: **Dr. William H. Smith**, Boston; **Dr. John Homans**, Brookline.
Secretaries: **Dr. George R. Minot**, Boston; **Dr. Hilbert F. Day**, Boston.

1. The Treatment of Pregnancy and Labor Complicated by Cardiac Lesions.—Dr. F. S. Newell, Boston.
2. Heart Lesions in Anesthesia.—Dr. F. L. Richardson, Boston.
3. The Normal Heart in the Navy.—G. F. Freeman, Medical Inspector, U.S.N.
4. The Consideration of Infections of the Nose and Throat as an Etiological Factor in Endocarditis.—Dr. George L. Tobey, Jr., Boston.
5. The Use of the X-ray in the Examination of the Heart and Aorta.—Dr. George W. Holmes, Newton.

The discussion of these papers will be opened by Dr. Henry A. Christian, Boston.

Miscellany.

DRUG ADDICTION.*

For some time past the prevalence of drug addiction has been regarded as a serious public health menace by persons who have given the matter any consideration. The evil became so widespread that federal, state and municipal authorities have attempted to deal with it by drastic legislation; apparently this has failed, for the whole subject has recently been subject to state investigation to discover just what is needed to control the evil. The chief points now under discussion and investigation relate to the causes and prevalence of drug addiction; the problems of relief and cure of the habit; and measures destined to safeguard and control the dispensing of habit-forming drugs.

The matter has recently been studied by the Public Health Committee of the New York Academy of Medicine and the New York Psychiatric Society, with the result that the following recommendations have been formulated:

Public Health Committee, Academy of Medicine and New York Psychiatric Society.

1. We recommend that the Federal Government take such measures as are feasible to abolish the manufacture of heroin altogether.

2. We recommend that the Federal Government be urged to adopt such legislative measures as will control and regulate the sale and distribution of opium and its derivatives and of cocain, from the

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* From the weekly bulletin of the New York Health Department.

time of its manufacture to the time of its final distribution; also, that it take measures to prevent the importation of these drugs except under proper conditions.

3. We recommend that the Federal Government do not at present extend its jurisdiction to the control of all habit-forming drugs, but that the control of special drugs be taken up as occasion seems to demand. Experience in New York City and the East shows that there is no great prevalence of drug habit aside from that of opium and its derivatives.

4. We recommend that a thorough study be made of the extent and causes of drug addiction, such studies, for example, as will give information as to the age, sex, occupation and environment, and the mental and physical condition of victims of the drug habit, and as to how their habit was formed.

With regard to the cause and frequency of the habit, we can make only provisional statements. So far as our knowledge goes, the drug habits formed as the result of long and painful sickness, as the result of painful surgical operations, and as the result of mental causes, like sorrow, depression and apprehensive states, constitute at present as in the past, a negligible proportion of the total.

The habit has largely been formed in recent years by association and imitation, by boys and young men and women who are often quite ignorant of the dangers of the habit. Examination of a long series of addicts at Bellevue Hospital shows that about four per cent. formed the habit through the advice and prescription of unscrupulous physicians who utilize what is known as the reduction treatment as a cover for the reprehensible practice.

So far as the number of addicts is concerned, we find some estimates by Martin T. Wilbert, United States Public Health Service Bulletin No. 321, to the effect that there are now over 175,000 addicts in the country. Estimates made by Dr. Kirby show that there would be perhaps 7,000 to 8,000 in Greater New York. Dr. Kirby's estimates are based on the statistics of Bellevue, Metropolitan and Kings County Hospitals, and on the reports from the hospitals of the Department of Correction.

There is an impression among some that the drug-addiction is *enormously prevalent* and is *growing rapidly* and becoming a serious menace to society. It is extremely important to find out the truth as to this. The Public Health Service states that about four million grains less of opium were imported into the United States in 1915 than in 1914, and about five million less than in 1913, but this may be due to the war.

5. We recommend that psychological and psychiatrical tests be made of a long and definite series of addicts.

No serious and comprehensive study of these problems has yet been made so far as we can find. Such information upon the subject of drug addiction can be gathered best through the agency of paid experts who will visit hospitals, courts, prisons and reformatories and who will interview such physicians and judges as are experienced in these matters.

6. We recognize that the surgeon-generals of the Army and Navy have taken a special interest in the subject of drug addiction. We recommend that if it has not already been done, some special study be made of the condition of drug addiction in the Army and Navy and that special care be taken to discover the existence of addiction in recruits. We understand that the Surgeon-Generals of the Army and Navy are already making special provision for the care and treatment of drug addicts.

7. We recommend that an attempt be made to plan some means of education of young men and women as to the dangers of habit-forming drugs. We advise the use of "movies" or any sensational methods.

8. We recommend that more attention and publicity be given to the facts which appear to have been established by long experience at Bellevue Hospital and elsewhere. The experience at Bellevue Hospital, after testing with many cures, shows that the drug can be withdrawn from the victim without any special cure being used, and it seems to be established that withdrawal can almost always be done safely and surely under ordinary hospital conditions where there is competent nursing and control.

9. We recommend very strongly that treatment for drug addiction should be given to patients only in properly organized hospitals or under institutional conditions, for it is the experience and conviction of all that drug addiction can be relieved and cured best in this way.

10. We recommend that the State do not at present undertake the cure of drug addiction, because the treatment and the subsequent plan of coöperative contact required for success is long, expensive and difficult unless carried out in the local community itself, and the State is not now equipped to undertake such work.

We recommend that in preference to this, at the present time the State do what it can to prevent the development of new cases and encourage provision for the relief of present sufferers.

11. We recommend, for the relief of present sufferers, and perhaps at times for radical treatment, the use of psychopathic hospitals or pavilions, and that special provisions be made in general hospitals throughout the State to care, under proper control, for those who ask for a withdrawal treatment. This we think, is what is due the patient who by law is deprived of the drug.

12. Finally, pending action by the Federal Government for the better control of habit-forming drugs, we recommend that the State of New York enact some law which will control the matter of drug addiction and the use of drugs by physicians in a better, more efficient and more practical way than does the present law. We leave the definite solution of this as a separate problem in technical legislation.

SOCIETY NOTICE.

Harvard Medical Alumni Association.—The annual meeting of the Harvard Medical Alumni Association will be held this year at the time of the meeting of The Massachusetts Medical Society, on Wednesday, June 19 at 2 P.M., in Sprague Hall, Boston Medical Library.

Graduates of the Harvard Medical School are requested to be present. Business: Reports and election of officers.

Graduates of the Harvard Medical School are invited to be present at the Alumni Spread at Cambridge on Commencement Day, June 20, at 12 o'clock.

James B. Ayer, *Secretary*.

RECENT DEATHS.

Dr. Aurelia Springer, of Lewiston, Maine, aged 82, died at Central Maine General Hospital on June 3. Dr. Springer was born in Dresden, Maine, and had studied medicine both in this country and abroad.

Charles Franklin Osman, M.D., died at his home in Dorchester, March 9, 1918, aged 62 years.

Dr. John Perrins, of Boston, died on May 18th, at the age of 80 years. He was a native of Birmingham, England. He began the study of medicine in England and continued his studies in the United States at the Cincinnati, Ohio, Eclectic College. Dr. Perrins was a member of the Massachusetts Eclectic Medical Society and the Boston District Eclectic Society.

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The Massachusetts Medical Society.

ANNUAL DISCOURSE.

NOTE.—At an adjourned meeting of The Massachusetts Medical Society held Oct. 3, 1860, it was

Resolved, "That The Massachusetts Medical Society hereby declares that it does not consider itself as having endorsed or censured the opinions in former published Annual Discourses, nor will it hold itself responsible for any opinions or sentiments advanced in any future similar discourses."

Resolved, "That the Committee on Publications be directed to print a statement to that effect at the commencement of each Annual Discourse which may hereafter be published."

THE SOCIALIZATION OF THE PRACTICE OF MEDICINE.*

BY MYLES STANDISH, M.D., S.D., BOSTON.

By the phrase, "The Socialization of the Practice of Medicine," I mean the tendency of the community as a whole to take over the care of the individual when he is ill.

Social, scientific and economic changes have come with great rapidity in the last few decades. They have already notably modified the practice of medicine and promise to do so to a much greater extent in the future. It is the socialistic tendency of these changes that I am about to consider in this discourse. We who practise medicine at the present time scarcely appreciate how recent are the conditions under which we do our daily work.

Until the establishment of the Massachusetts General Hospital in 1811, such an institution was unknown in New England. There were, it is true, pest houses, or lazarets, and almshouses, but these cannot truthfully be said to have been for the care of the sick; they were, rather, places for the segregation of cases of smallpox, the insane, etc., and were for the protection of the community rather than for the treatment of the persons who were compulsorily placed therein. Such places were managed by individuals to whom the town had practically auctioned off the job, the lowest bidder receiving the contract.

Not until 1830 did the Commonwealth undertake to care for any group of its citizens in need of medical care. In that year the State built the Hospital for the Insane at Worcester, and began to take this class of unfortunates from the almost inhuman conditions under which they were held in the almshouses.

Even then the idea of caring for people who were ill was not clearly accepted, as this institution was called an "asylum."

From the establishment of these two institutions we must date the great growth which has since developed in the care of the sick by the community in this Commonwealth. Both institutions were, in principal intent, for the housing as well as the medical care of the patients.

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* Delivered before the Massachusetts Medical Society, at Boston, June 19, 1918.

Previous to that, the Boston Dispensary had been established, in 1796, for the medical relief of the poor, in order that the sick might be attended and relieved in their own houses, and that those who had seen better days might be comforted without being humiliated; that is, treated as paupers. It was incorporated in 1801, and by 1825 bitter complaints of its operations as a medical charity began to be voiced by the profession.

The next step was when, on the same day in 1846 that ether was first used as an anesthetic for a surgical operation at the Massachusetts General Hospital, the Board of Trustees of that institution gave formal recognition to an out-patient service which must have sprung up unauthorized before that date, because the Trustees voted that records should be kept of patients living outside who came to the hospital for treatment. Since that memorable day in 1846 the number of hospitals with out-patient services has rapidly increased. There are now 20 such hospital clinics in Boston, and the total number of individuals treated in a year is about 300,000. Of course, a certain proportion of these patients are either "rounders" or the same individuals going to different clinics for various complaints, but still it is probable that there are at least 270,000 people who receive medical treatment free of expense to themselves in this city every year—a large percentage of the total inhabitants of the city.

Suburban and other cities are rapidly reproducing this condition in their own communities, having about 33,700 individuals attending out-patient departments of hospitals in a year.

In 1864 the City of Boston established a hospital for the care of its own citizens, at the public expense, if necessary. This hospital in the fifty odd years of its existence has grown to be a great institution of 1088 beds, and received in 1916 an appropriation of nearly $800,000 from the money raised by taxes.

An out-patient department was immediately established at this institution, and soon had a very large clientele. Since that date many other large cities and towns have, directly or indirectly, established hospitals for the treatment of their citizens when ill.

In 1895 the State, which had already increased its institutions for the care of the insane from one to four, also established a hospital for dipsomaniacs and other drug addicts at Foxboro.

The institution at Tewksbury had changed its character, largely, from an almshouse to a large modern hospital for the treatment of such chronic cases as fell into the care and support of the Commonwealth.

In 1895, also, the Boston City Hospital established the first separate hospital for the treatment of infectious diseases, which, under the pressure of the Board of Health, tends more and more to receive a large and increasing proportion of all such cases in the community and which will undoubtedly in the future take care of all infectious cases excepting only such persons as can, by means of their wealth, or better housing conditions, give the best of care and isolation to their sick.

The State has passed laws which, in theory at least, compel each and every town, or group of towns, to maintain an isolation hospital for smallpox, and doubtless this law will be eventually broadened to include all other infectious diseases. Such a widening of the scope of all institutions for the care of the sick is the undoubted tendency of the day.

From 1895 to 1898 the Commonwealth established its great hospitals for the care of the tuberculous.

In 1906 the City of Boston established a municipal hospital for the same purpose, and in 1907 the Commonwealth passed a mandatory act compelling each city and town, or group of small towns, to maintain also a hospital for the tuberculous. The fact that in ten years the State has so largely taken over the care of the tuberculous is an illustration of the rapidity with which such revolutionary changes are adopted in recent years.

In the course of time the out-patient clinics, finding that the giving of medical treatment consisted in something more than the writing of prescriptions, and that they were at a disadvantage, as compared with the private practitioner, who through his domiciliary visits was able by demands, tact and management to control the surroundings and activities of his patients, established the social service personnel of their clinics. The Massachusetts General Hospital was the first and prime mover in this addition to the Hospital Staff. The Social Service at that institution was established in 1905, and has been the means of largely increasing the efficiency of the Out-Patient Clinic, and more firmly and widely establishing public care of the sick. The example of the Massachusetts General Hospital has been widely followed by hospitals, both in Massachusetts and elsewhere.

The most recent example of this assumption by the community of the medical care of an ever-increasing proportion of the population is the establishment in 1916 by the Massachusetts General Hospital of a pay consultation clinic, to which physicians can bring their patients. The fee is small, the number of eminent consultants large, and there are whispers in medical circles that some of these gentlemen have found the burden excessive when the need of finding some time in which to support themselves and their families was considered. This service has at present been discontinued owing to the draft of the medical men into the military service. In this connection, it is interesting to note that the Boston Dispensary maintains a pay clinic for the examination of the eyes for errors of refraction.

There is also a constant tendency for public hospitals to erect private wards for the care of people of means.

The socialization of medical practice is again well shown in the changes or, rather, the additions to the services of boards of health. Our municipal boards of health and the State Department of Health, under certain conditions, maintain laboratories which give free service in the matter of bacteriological diagnosis, blood examinations, etc. The State Department of Health, at the demand of local boards of health, has for years furnished expert consultants to the local physicians in doubtful cases of smallpox, poliomyelitis, local epidemics, etc. It also distributes free, and in some instances itself manufactures, certain biological products used for medical treatment. In the first three months of 1917 it distributed diphtheria antitoxin, smallpox vaccine, typhoid vaccine, paratyphoid vaccine, antimeningitic serum, and silver nitrate ampoules. The latest extension of its service contemplates the division of the State into districts and in each one establishing a center for the care of venereal diseases. That such an arrangement is likely to become an active, widely extended, and eventually a compulsory service will be believed by anyone who has watched the trend of events in the assumption by the Government of the care of dangerous infective diseases.

Hospitals and boards of health are by no means the only institutions which have taken a part in this socialization of medicine. The public schools have had added to their staffs physicians and a corps of nurses whose duty it is to examine the children for defects or diseased conditions, to advise their parents to have them properly treated and to see that the advice is followed.

This latter element will ultimately be found to have no other result than the eventual assumption of such care as it advises. Indeed, a beginning has been made in at least one city in this State, where the examination of the school children's eyes and the furnishing of glasses at a discount from the ordinary retail price, and when necessary entirely free of expense, has been assumed by the community.

Free dental care of school children has been widely discussed and earnestly advocated, and the establishment of the Forsyth Dental Infirmary for school children in Boston is the first step in this direction and, in all probability, will not long remain unique.

The economic conditions of the 270,000 people who attend hospital out-patient clinics in Boston is indicated by the fact that the report of the special commission, created by the Commonwealth to study the question of social insurance, states that 45% of them earned from $15 to $20 per week in 1916, and that 7% of the Out-Patient Department patients of the Boston Dispensary and 11% of the out-patients of the Massachusetts General Hospital were earning from $20 to $25 per week.

The lengths to which the communistic conception of medical practice is already advocated is well illustrated in the so-called Framingham Experiment.

This town was taken by the National Association for the Study and Prevention of Tuberculosis, as a representative town with a fair proportion of manufacturing, commercial and residential population; and because it was already well organized socially and medically, one hundred thousand dollars was donated to carry on the work, and the community was to be stimulated to use every means to combat disease. In this experiment all the inhabitants, or certain large groups of them, were to be examined as to their physical condition. Individuals found to have impaired physical conditions were to be advised to undertake medical treatment. Salaried physicians were to be appointed to take charge of the school children, and everybody was to receive medical care and advice, either from their own physicians, or without expense to themselves. The people were requested to go to their physicians for examination, but as this alone would not bring about such a general examination as was desirable, physicians were brought into town to assist in the medical survey. The Society opened a free clinic for the tuberculous.

Dr. D. B. Armstrong, in charge of the experiment, in an article published in the *Journal of the American Medical Association*, September, 1917, states that there had already been established a permanent full-time medical and nursing service for the school children, with a general supervising nursing service by the Board of Health; a full-time medical and nursing service for at least half of the industrial population; provision for a full-time secretary with plans for nursing and relief service under the auspices of a local civic league. The same gentleman, in an article in the BOSTON MEDICAL AND SURGICAL JOURNAL, February, 1917, also suggests a dispensary service, built on the clinic for the tuberculous already established, which might be placed on a pay and self-supporting basis, that would include not only tubercular cases, but also general medical, school medical, infant welfare, and, perhaps, dental services. He says, "It is the hope of the Committee that further developments of the work will demonstrate that on a community basis, disease may be prevented and health created, thereby laying a permanent foundation for future social, economic and spiritual evolution," and further says, "that it ought also to be significant perhaps in its bearing upon the future of medical service in general."

It will need no argument on my part to convince this assembly that if half of the community were given a free medical and nursing service under a popular government, there would inevitably arise a demand from the voting population that the same benefits be extended to the entire people.

All the extensions of the community care of the sick, so far considered, have their origin in the humanitarian, that is to say, the medical side of the question; but for the last two decades a demand for governmental aid and authority in the extension of medical service has been pressed from the economic side, the argument, summed up in a phrase, being that the health and efficiency of the community was an economic asset of great value, and therefore the law should compel manufacturing corporations and the people themselves to provide for the prompt restoration of health to the incapacitated.

This demand in Massachusetts has resulted, as it has in many other States, in the compulsory insurance by employers of their employees against industrial accidents. This law was passed in this Commonwealth in 1911, and has been amended annually by each Legislature elected since that date.

The law, for the purposes of this discussion, is essentially this: It compels the employer to insure his employees against accident, and the insurance company pays, among other things, for the medical and hospital care of the injured. This at first resulted in the insurance company contracting with a physician in each district to care for all such cases and refusing, except under certain conditions, to allow payments to other physicians. This arrangement pleased neither the patients nor the great body of practising physicians, and in 1917 the law was amended to allow the selection of the physician by the patient, if he chose to exercise that privilege.

The State appointed an Industrial Accident Board, which awards the amount of compensation that should be paid each injured person, and determines the amount of the fee that shall be paid to the physician who had the care of the case. The Board shows the prevailing tendency of the times in the community care of the sick or injured in its liberal interpretation of what constitutes an industrial accident. It has decided that an injury received in a fist fight between longshoremen is an industrial accident, as longshoremen are necessarily rough fellows. Also that an optic atrophy supervening in case of tabes was due to the afflicted man's occupation as a fireman in a boiler room.

The communistic advance of the medical service idea was much in evidence a year ago, when an attempt was made to pass a radical compulsory health insurance act in this and other States.

The essential features of this proposed act, from the point of view of this discussion, were that all wage-earners, except agricultural employees and domestic servants, who earned $25 a week or less, should be compelled to join a local association for health insurance; that indemnity funds should be provided in part by the employers, in part by the employees, and in part by the Commonwealth, from moneys received from taxes. Other individuals, whose earnings were $25 a week or less, could voluntarily join these associations.

These local carriers, as they were called, were empowered to contract with a physician or physicians for the care of the sick, to provide medicines and nurses, orthopedic apparatus, eye glasses, etc., to the members of the association, and, with certain limitations, to the members of their families. They were also directed, when able, to build hospitals and sanatoria. This law, by the way, came over from our friends the enemy, as you will see later, and was taken bodily, except that it went higher up the wage scale than the German system.

What proportion of the community would be beneficiaries under the Health Insurance act proposed in this State, I do not know. I have heard it variously estimated as from 30% to 70% of the population of the State. But, whatever the actual number may be, there is no doubt that it would be a very large proportion in any industrial community and would cause a great disruption of the practice of all medical men in manufacturing centers.

This progressive tendency toward the socialization of the practice of medicine has not been peculiar to Massachusetts or America, but has become from decade to decade more and more apparent in Europe.

In England, early in the 19th century, there were mutual aid societies formed among wage-earners to insure themselves against various financial disasters which may happen in the lives of people whose income is such that the bare necessities of life practically consume their entire earnings. These societies gave their members medical aid. They became known under the generic name of the Friendly Societies. They were popular, and it was finally discovered that the organization and management of such societies gave a proper, but material addition to the income of the men who had charge of their activities. As a consequence, many such societies were organized, and there arose quite a competition for members, and the managers eventually canvassed for and accepted members whose incomes were much larger than those for whom the societies were originally intended. Door-to-door canvasses were made for members, and I have seen hand-bills asking for members in the windows of small shops in English provincial cities.

These societies contracted with a medical adviser for treatment of the entire group. Competition among the medical men brought the salaries down to a very low level. Those of you who are accustomed to read the *British Medical Journal* will remember the periodical appearance, for years before the National Insurance Act, of lists of Friendly Societies, with the statement that the salaries which they paid were unfair for the amount of work exacted, and asking all members of the profession to refuse employment under the societies named in the list. It was a burning question with the physicians of England for a quarter of a century.

The first compulsory action of the English Government in the direction of medical care of wage-earners was when the Employers' Liability Act was passed in 1880. The last Workmen's Compensation Act was passed in 1906.

The similar laws in Massachusetts and other American States were modelled on these laws, and are so well known to all physicians that their provisions need not detain us at this time.

The English Parliament in 1911 enacted the National Insurance Act. This law is compulsory. The funds are derived seven-ninths from the employers and the beneficiaries, if they are men, and three-fourths if the beneficiaries are women. The balance is derived from moneys raised by taxation. The individuals who are thus compulsorily insured comprise all "employed" persons, British or alien, from 16 to 70 years of age. All other persons engaged in some regular occupation, and who are wholly or mainly dependent for their livelihood on the earnings derived from that occupation, can voluntarily insure under the Act, provided their total income from all sources does not exceed 160 pounds a year. It is also provided that persons who have previously been "employed" and insured for five years or more, may, subsequent to said employment, voluntarily be insured without limitation as to income.

The medical benefits were medical attendance and treatment, medicine, medical and surgical appliances, treatment in sanatoria for tuberculosis, and maternity benefits.

When the law was first proposed it was planned that the Government should organize associations to administer the act by localities, trades, industries and industrial organizations. This, of course, raised a great protest from the Friendly Societies, which ended in the Government practically accepting the existing societies as the agents for the administration of the law, the Government reserving only the right to organize such associations as might be necessary where Friendly Societies did not exist, or where the insured preferred not to join them.

The medical profession was very much agitated by the proposition, and the British Medical Association came almost to the point of threatening a general strike unless the remuneration was made satisfactory to them.

The terms first proposed by the introducers of the law were 4s. per year per capita. The Cabinet officer having the matter in charge said that the Friendly Societies paid from 2s. 6d. up. The highest, by the way, was the Postal Employees Association, which paid 8s.—two dollars a year for all medical care and medicines.

Finally, the British Medical Association was pacified by a per capita payment of 6s. 6d. The sixpence was supposed to cover the cost of medicines.

Another complaint of the medical men against the proposed act was that the law contemplated the continuance of the old and vicious contract system, which enabled the societies to contract with one or a few medical men, whom they could discharge if they did not conduct their medical practice in such a manner as to be advantageous to the funds of the society. This point was fought bitterly both by the profession and the Friendly Societies, and the final result was the so-called "panel" system, whereby any respectable physician could signify his willingness to serve on the panel, the insured person to be free to select from the panel the physician he preferred. The physician was to receive from the societies the 4s. and 6d. of all those who selected him for that year.

In 1914 there were insured under the National Insurance Act in England 13,643,000 persons, and in May of that year there were 16,000 physicians on the "panel." About half of these gentlemen had not more than 500 persons on their list; 30% had from 500 to 1000 persons; 16% had from 1000 to 2000 persons, and 4% had more than 2000 persons. It must have been one of these latter gentlemen to whom a medical man in Oxford alluded when I asked him in 1912 how the law was working. "Oh well!" he said, "some of the men do pretty well. A friend of mine over in Wales sometimes sees 80 patients in his surgery of an evening." The total cost of all the medical benefits paid for under the act was 5,616,000 pounds in 1914.

Compulsory health insurance was, however, first instituted in that land of compulsion—Germany. The first law was passed in 1884, and included miners and others engaged in dangerous occupations, but the scope has been broadened from time to time, until a bill that was passed just before the opening of the present war covered all manual workers, foremen, commercial employees, domestic servants, agricultural laborers and government employees. Other than employed individuals, with the same income, can join the societies. The upper limit of wages was raised by this bill to $625. In 1885, 10% of the population were in these societies, which number was increased gradually, until, in 1910, they contained 22% of the population, to which it was estimated the last amendment to the bill would add another million people.

Previous to the institution of compulsory health insurance in Germany there had existed, as in England, Mutual Aid Societies which had, as one of their principal benefits, medical aid. Indeed, they had existed in Germany for a much longer period of time than in England, and they were utilized to some extent under the Health Insurance Act, but the bulk of the beneficiaries were organized into new society groups arranged according to occupation, and all workers were compelled to join a particular society, in accordance with their employment.

The doctors complain that most of the members of these societies take very little part in their government, and that the management falls too often into the hands of the political group called "social democrats." The direct expenses are borne by the employers and wage-earners, although the Government spends considerable money in general oversight and management.

The services of a physician are provided in accordance with the regulations established by each fund; the usual plan is for the society to make contracts with a number of physicians, who give their services in return for an annual sum, fixed in advance, or for a specified sum per case, also fixed in advance. In no case is the charge fixed on the number of visits or number of prescriptions. Some of the societies, in order to secure low rates of fees from the physicians, provide only the services of a limited number of physicians. The competition among the physicians to secure the position of medical officer in such cases has resulted in reducing the cost of the service to the funds to a very low level, and the fees have often been so small as to produce vigorous protests from the medical profession. This protest has resulted in numerous "doctor strikes," in which the physicians have refused to work for these societies, and the strikes in some places have been so strenuous that the physicians not only refused to act for the societies, but also even to treat as a private patient any individual insured in them.

I have found allusions to 1022 of these strikes, of which 921 were decided in favor of the physicians, 11 in favor of the societies, and the other 90 were pending at the time of the compilation.

Some of the societies make contracts with a large number of physicians, and the insured person is allowed to select the physician he wishes to attend him.

This comparatively free choice of a physician has generally been the result of a desperate struggle between the societies and physicians of that particular locality. The most notable example of this arrangement is in Leipsic, where the society has contracts with some 400 physicians,—the list includes many specialists in all branches of medicine, including dentistry. The strike to obtain this condition was very bitterly fought. It took place in 1904. The demands of the physicians were an increase of fees to $1.00 per member without dependents, and $3.00 per member with dependents,—little enough surely,—a free choice of physician, and that agreements with the individual physician should not be terminable at the will of the society.

The list of the demands of a labor union strike in this country often covers practically the same demands.

The physicians terminated their service on April 1, 1904. They were loyally supported by practically all the other physicians in Leipsic and the neighborhood. The University medical professors and teachers refused to treat society patients in the University clinics.

The society fought back by importing physicians, to whom they guaranteed an income of $1500 a year. They established three consultation centers under the charge of whole-time medical officers.

The physicians took steps to discourage doctors from entering the service, and of 75 who agreed to come but 62 came.

The supervisory authorities were petitioned to intervene and compel the society to provide adequate medical service. The authority decided that at least 112 physicians were necessary for the proper treatment of the members. The society was unable to fulfil the requirement, and the much-quoted present arrangement was agreed upon.

At Cologne there was a similar contest, in which the society was victorious, and at the time of my latest information it had in its employ 70 or 80 physicians, including specialists—all except about 15 of whom had been imported by the society. Some of them were doctors that had previously been employed by the Leipsic society in its struggle with the local physicians, of which I have spoken. Three hundred physicians of Cologne refused to serve the societies. These gentlemen belong to the "Leipziger Verband," which is an association of 23,800 physicians, 95% of the profession in Germany, who have organized themselves under that name into what is frankly a trade union. The details of the methods of paying the physicians by the societies varies widely, but it is an interesting fact that in some instances the local organization of the physicians receives the total amount paid by the societies for medical service, and divides it among the practitioners in accordance with the amount of service they have given.

The average amount paid by the societies in Germany for medical service in 1910 was $1.37 per person per annum.

These insurance societies in Germany also furnish orthopedic appliances, false teeth, false eyes, spectacles, etc. They pay for the care of their members in hospitals and institutions, often less than the cost to those much-imposed-upon organizations.

The law allows and some of these societies have already established hospitals, convalescent homes, sanatoria, etc., of their own.

The enactment of laws for compulsory health insurance has spread rapidly over Europe. Between 1884 and 1913 the following countries had established such systems: Germany, Austria, Hungary, Luxemburg, Norway, Servia, Great Britain, Russia, Roumania, and the Netherlands, and from 30 to 33% of their population have been withdrawn from the domain of private practice.

Compulsory health insurance for certain groups of wage-earners has been adopted by Belgium, Italy, France and Spain, while laws for subsidized voluntary health insurance, covering a large proportion of the population, exist in Sweden, Denmark, Belgium and Switzerland.

No American State has to my knowledge enacted such a law, although in Massachusetts such action was strongly advocated by Governor McCall.

Massachusetts, in 1917, appointed a special Commission to consider the subject, which made its report to the Legislature this year. It did not advise the adoption of compulsory health insurance at the present time, but it did advise the enactment of three laws which are interesting from the point of view of this discussion.

The first recommendation was that a sum of money be appropriated by the General Court to be expended by the trustees of the General Insurance Guarantee Fund for the purpose of further encouraging and promoting the organization of mutual benefit associations among the employees in industrial plants in Massachusetts, in order to afford them an opportunity to insure themselves against sickness and disability, at their option. This law is on its passage through the Legislature at this writing.

The formation and successful operation of such associations would be the first step towards compulsory health insurance, for the history of governments will show that whenever an association of philanthropic people, or an association for financial gain, has broken the ground in a new direction in supplying a need of the community, the government will first regulate, and eventually step in and take over the work, to the practical exclusion of private effort. This has been the result in education, water supply, postal service, hospitals, and transportation, in many countries, and that the tendency is still active is shown in the agitation in this country that the Government take over the telegraph and telephone lines and public utilities.

The Commission on Social Insurance thus not only looks forward to compulsory health insurance, but advocates a still more direct assumption of the medical care of the community in another law which it proposes: An act entitled to provide free medical treatment for school children, which provides that such medical and surgical care shall consist of medical diagnosis and the medical and surgical treatment of the eyes, ears, noses, teeth, throats, lungs, posture and nervous systems of the pupils, the cost to be apportioned between the cities and towns and the Commonwealth, in such proportions as the General Court shall determine.

If the General Court should pass such a law, it is evident that in school children, with the single exception of the heart, private practice would be limited to the disorders of such organs as nature has placed below the diaphragm.

The third recommendation of this Commission was that the State Department of Health might provide laboratory and x-ray equipment for the out-patient departments of hospitals and dispensaries, under certain limitations, but specifies that the control of and the regulations in regard to the use of these appliances should remain in the hands of the authorities.

Those of my auditors who have patiently followed thus far, have seen a steady and purposeful extension of public service in medicine going on in this country and in Europe for a century. A social movement in a service so vital to the community, continued for so long, is, without doubt, destined to continue. When 30% of the community receive medical treatment free, or for a very small sum, there will undoubtedly arise a demand for the extension of the same system, or some modification of it, to the entire population. An extension of such service, with a demand by the people for medical care and treatment at a minimum cost, would result in medicine becoming more and more a function of the State. In fact, the State already demands of every physician much service, in the way of notification of births, deaths, contagious diseases, venereal diseases, and cocaine and morphine addicts, and most of this service is now required in America without pay, although in England the physician is allowed 2s. 6d. for each notification filed.

The logical result of such a situation must be that all medical men will eventually become government officials.

That medical men are destined to become government employees may seem a prophecy, the fulfilment of which is far away in the future, but there are already portents in the sky. In England, under the stress of war, there has been a relocation of medical men in civil practice so that all districts may be served. In New Zealand, that laboratory for the working out of all sorts of socialistic experiments, the medical men themselves have asked the Government that the country be divided into districts, that a physician be assigned to each district, and that the Government guarantee the medical practitioners a certain minimum, but a living income; and I have, this spring, read in a newspaper despatch that the Prime Minister of England, Mr. Lloyd George, replied to a visiting delegation that after the war he would be willing to consider the "nationalization of medicine."

Government official salaries to employees are now, and always have been, regulated to an amount that is barely sufficient suitably to maintain the recipients in their station in life without the ability to accumulate savings for old age, which is, no doubt, the reason that there has arisen in Massachusetts, as elsewhere, a persistent demand for pensions upon retirement for teachers, firemen, policemen, clerks, and all classes of public employees.

When the great bulk of medical practitioners become comparatively poorly paid government officials, the great cost of a medical education, as compared with other professions, will bring a new factor into this problem.

The broadening of the field in medicine in the last quarter of a century has added to the expenditure, both of time and money, which is required of the student in medicine, as compared with other professions.

Many States now require that the physician to be licensed to practise medicine shall have devoted six years to study, after leaving the high school, before he receives his medical degree, viz., two years of college and four in the medical school. That this requirement will soon be universal is assured, and to this there is no doubt that another year in a hospital interneship, or its equivalent, will soon be added.

This is nearly twice the time required in other professions.

In law, in this State the student may get his degree in three years from the high school. This is true in most divinity schools. University schools of business administration often admit from the high school to a two or three years' course.

Architects, engineers and chemists receive their degrees from the Massachusetts Institute of Technology in four years from the high school.

In the actual expenditure of money for tuition, of all professions, medicine demands the highest fee.

At Harvard, in the Law School, Graduate School, School of Business Administration, etc., the fee is $150, but in the Dental School it is $200, and in the Medical School proper it is $225, with a matriculation fee and numerous laboratory fees in addition.

These higher fees for medical tuition are fully justified. The cost of present-day medical education is appalling to the smaller universities of the country.

To cite the Harvard Medical School: The cost to the University of maintaining its Medical School last year was $494,115.95. The School had 357 students, which was, roughly, $1385 per student.

It is true that the School gave instruction in certain courses to 94 dental students, and to six students studying for the degree of Doctor of Public Health, but as the Dental School paid the Medical School only $14,000 for their instruction, that fact did not very materially affect the cost per student to the Medical School.

The amount of time required, the cost of living during the student period, as well as the necessary tuition fees, are likely to increase in the future as they have already increased in the last generation, or longer; and if the rewards for the student in his lifelong practice are, by converting the practice of medicine into a governmental occupation, to be very moderate, will not the attractiveness of medicine as a means of livelihood diminish, and will not the parents be apt to decide that a medical education is a poor investment of so much capital?

It would seem that such must be the natural result, and that the number of young men entering the profession would fall far short of the number necessary to care for the community.

If this should prove to be a correct estimate of the situation which would arise, I see but one solution of the problem, and that is, the Government will have to undertake the entire expense of the education of medical men, as it now does that of army and navy officers at West Point and Annapolis; pay them during their working days, and give them sufficient pensions after retirement to support them in old age. Nor is this soluton as radical as it might seem at first thought. The Commonwealth of Massachusetts at the present time furnishes a free education to the members of one great profession, and does so for the same reasons that, in my opinion, will force the State to assume the cost of educating its medical men. I refer to the public school teachers, who are educated by the State without cost for tuition, books, etc., and with a nominal payment for board and rooms in our normal schools.

There will, of course, always be private practitioners of medicine, for men will arise in the ranks of the profession of such preëminent reputation and skill that people will always be willing to pay them abundantly for their advice and treatment.

These men, even though educated at government expense and assured of a livelihood, will resign from the public service, as great engineers, educated at West Point, leave the Army for higher remuneration, as directors of great works of civil construction, and as naval constructors leave the Navy to accept much higher salaries from rich ship-building corporations.

There will always exist in the community a group of well-to-do people, who will prefer to have free choice of their medical adviser, just as at the present time there is a considerable group of people who prefer to send their children to private schools, and, in my judgment, the group of people exclusively employing private medical practitioners in the future will prove to be about as large a proportion of the entire community as the group which at the present time send their children to private schools.

This picture that I have drawn of the conditions of medical practice in the future is, in my opinion, a logical projection into the future of the lines of change in the methods of medical practice which have actually been adopted by the community and the profession in the last hundred years. These changes have been the result of an awakening of the public conscience as to the right of all citizens to have proper medical advice and attendance; to a constant tendency of the Government to regulate, control, and, in the end, supply all public service; to the fact that medical knowledge has become so broadened that it is impossible for any one man to be expert in all its branches, and thus has led the people to regard medical service as a service that no one man can fulfil, with the consequent loss of the sense of friendly protection and personal care which made the patient look upon his physician as a wise family friend.

The changes also have been largely due to the great aggregation of people in large commercial or manufacturing cities, where individual personal effort for the aid of one's neighbors seemed so inefficient that organized corporate effort appeared to be the only effective way in which to meet the problem, with the result that socialistic and impersonal ideals have usurped the places of the more personal and friendly ones of our forefathers.

None of these causes of change are likely to diminish as time goes on, therefore organized, systematized, efficient medical service is likely to be developed—with, alas! a little less of the personal human element in it.

The community, in its governmental, commercial, social and individual units, will, in the future, as it has in the past, need medical advice, and the learned men who give this advice, must be educated and supported by those who benefit by their skill, but the methods, both of education and payment, will not be those of the present day.

Physicians in the future will be just as eager, and perhaps even more so, to prevent disease and alleviate suffering, but that the conditions under which they do their work will change, radically change, seems inevitable.

Massachusetts Anti-Tuberculosis League.

FOURTH ANNUAL MEETING, BOSTON, APRIL 11, 1918.

Introductory Remarks by the President.

By Vincent Y. Bowditch, M.D., Boston.

Our present meeting is held after a year of the great stress of war, with our minds and hearts fixed upon matters far from the ordinary. The ranks of our active workers have been largely reduced. Not only have our vice-president, Dr. Roger I. Lee, and our treasurer, Mr. Arthur Drinkwater, been called to active military duties, but our Executive Secretary, Mr. Seymour H. Stone, to whom the League owes so much of its success, has patriotically directed his energies for an indefinite period towards special war work. This has, necessarily, thrown greater responsibility upon those who are left behind,—a burden, however, which they have gladly shouldered in their endeavor not only to keep up the standards of our League, but thus indirectly to help our country in the present great crisis in its history.

In spite of these hindrances to the best work, I think it can be said that we have had a year of usefulness, in which we have done more than merely "mark time," and have succeeded in keeping before the public the necessity of never-ceasing activity in fighting tuberculosis.

In the early autumn it was suggested by the Executive Secretary of the National Tuberculosis Association, Dr. Charles J. Hatfield, that our League should institute a series of lectures to be given by specialists in tuberculosis to the military medical staffs at the cantonments and camps in Massachusetts. Following this suggestion, under the auspices of the League, several specialists of national repute have visited Camp Devens and have given interesting lectures upon various phases of the tuberculosis question. The League is especially indebted to Dr. E. R. Baldwin of Saranac Lake; Dr. G. Benjamin White of Otisville, N. Y.; Dr. A. K. Krause of Johns Hopkins Hospital, Baltimore; Dr. Donald B. Armstrong of the Community Health Demonstration at Framingham, who kindly took the place of Dr. David R. Lyman of Connecticut, during the latter's service abroad, and Dr. Charles L. Minor of Asheville, N. C., who had kindly consented to appear, but at the last was prevented by illness from so doing.

These lectures were given at the Base Hospital, and were attended by large numbers of the medical men stationed at Camp Devens. An attempt was made to have instructive lectures given to the soldiers themselves in the Y. M. C. A. halls, but the plan was later placed in the hands of the military medical authorities at the cantonment as being a better method of reaching the soldiers than through the medium of "talks" by civilian physicians. By personal observation, when accompanying these gentlemen to Camp Devens, I became convinced that the lectures as given were productive of much interest and benefit to the medical men. However, it seemed much wiser to leave the instruction of the soldiers themselves to the military medical authorities,—the psychological effect of a uniform upon the minds of young listeners being very marked and much more productive of respectful attention than is often the case when the ordinary civilian tries to hold their interest in these matters.

Another feature of war work touched upon during the year was a series of letters sent to the various anti-tuberculosis associations throughout our State, urging upon them the importance of following up cases which had been rejected by recruit examiners on account of suspected or confirmed tuberculosis. The importance of having this often difficult task done with care and tact was emphasized, the object being to record, as far as possible, these rejected cases; to see that they were properly classified at the office of our State Department of Health, and steps taken for proper treatment. How far this suggestion has met with response I am not in a position yet to say, but the large number of cases recorded at the health department warrants the belief that our members have been helpful throughout the State in bringing this about.

In this connection it seems well to speak of the ever-growing importance of the work now presided over by Miss Bernice M. Billings, to whom is entrusted the after-care of the tuberculous patients discharged from our state sanatoria. The members of our League can do no better work than by bringing this before the communities in which they live. Nurses are greatly needed in the rural districts, and proper means of conveyance for them are essential. Many a case is now neglected because it is impossible for any one nurse to reach places which are remote from the centers of population. A small Ford car for the use of nurses in these rural districts would greatly enhance the quantity and quality of the work done by them. Two or three of the larger districts, through private sources, have already obtained such cars, with great help to the amount and quality of service rendered, as well as to the physical well-being of the nurses themselves. I cannot urge too strongly upon our associations throughout the State the necessity for developing this work. It must be done for the present, at any rate, by private subscription, even if the State later recognizes its importance and makes proper provision for it. In every community there are people who, when properly approached, will give money for such purposes.

The war is steadily and surely making us realize how the business of looking after cases of tuberculosis must grow in the immediate future, and an increased energy on the part of all our state local associations is absolutely essential. The necessity of financial aid in the rural districts and elsewhere can be made to reach the public by notices placed in all local newspapers in the State. By such means we may hope to increase the efficiency of the work of our League during the coming year.

An effort was made during the last season, through the suggestion of one of our most active workers, Mrs. Mabel Greeley Smith, of Cambridge, to have the secretaries or other active members of local associations send in to the central office the general methods of procedure in each association, so that a comparison could be made which would be helpful to all. I must confess to disappointment in the lack of response thus far to this appeal,—only two or three replies to letters having been received during the winter months as to methods of work. It is to be hoped that during the coming year some plan can be formed by which a comparison of methods may be established which will be productive of good to the whole League.

It is fitting that attention should be especially called at this meeting to one very important feature of anti-tuberculosis work in Massachusetts, which marks, in my opinion, a decided advance in our methods, and will, when developed, be productive of good to the patient, not only in a physical, but also in an economic sense.

I refer to the recently completed "Workshop and Recreation Building" established at Rutland, Massachusetts, under the auspices of the Rutland Private Sanatorium Association, for the benefit of patients who are obliged to live in Rutland, either at private sanatoria, boarding houses, or in their own homes. In this building, opened last autumn, opportunity is given not only for recreation, so essential for people who are exiled from their homes, but, when necessary, for earning money by weaving, basket- and pottery-making. Of the beneficial effect, both mental and physical, of such methods, I hardly need to speak, but this work should be widely known and encouraged by all philanthropic people and by those who are especially interested in the welfare of the tuberculous and the anti-tuberculosis movement. "Seeing is believing," and I wish to take this opportunity of urging upon everyone the necessity of visiting this institution in Rutland, the formation of which is largely due to the courage, persistency and foresight of the physicians who are in charge of private sanatoria in Rutland, and their laymen associates; an inspiration to those who visit it. The place is one which should grow to large dimensions and make Rutland the Saranac Lake of Massachusetts, where those who are afflicted can go with a prospect not only of regaining their health, but also of remaining there in suitable homes and with means of diversion and occupation which are necessary for their comfort and welfare. It should be stated, perhaps, that this project has nothing whatever to do with the state institution, but has been started and aided by private subscriptions only.

Another important phase of anti-tuberculosis work is the necessity of accommodations for people of moderate means who cannot afford to go to expensive sanatoria and who shrink from the publicity of state sanatoria. This need is never more apparent than now. So far as I know, the Sharon Sanatorium, now beginning its twenty-seventh year, is the only one in New England where, for $10.00 a week, women of refinement, but of limited means, can obtain the same sort of accommodations and medical attention as are found in more expensive sanatoria; and it is continually brought to my attention what a lamentable lack there is of small institutions for this special type of patient. They involve, of course, dependence upon private sources largely for their maintenance, the small price asked being utterly inadequate to meet expenses. Similar institutions to that at Sharon are needed not only for men and women of the civilian class but, in consequence of the war, for many previously unknown and unsuspected cases of tuberculosis among the military men, for whom this class of sanatoria will be more than ever necessary.

The military authorities at Washington are already planning sanatoria and hospitals for tuberculous soldiers, where large numbers can be taken care of, but in the near future there will be military and naval commissioned and non-commissioned officers of limited means who will prefer the privacy of institutions not under governmental control. For such, the one recently incorporated by a number of well-known physicians and laymen, and about to be built in close proximity to the Rutland Workshop and Recreation Building, is a striking example of what is needed. Already the project has received the generous support and endorsement of a number of prominent Massachusetts physicians and laymen; of the President and Executive Secretary of the National Tuberculosis Association and the President of the Framingham Health Community Association. Ground has been broken for the buildings, and with the steadily growing sums of money subscribed, the managers hope to see, before many months, the completion of a model institution which *shall not be used for profit,* but in which a sliding scale of prices can be asked sufficient to meet expenses; any excess of income to be devoted to the increased scientific efficiency of the sanatorium. The sanatorium will be under the superintendence of Dr. Bayard T. Crane, of Rutland, whose long experience and indefatigable energy in tuberculosis work are well known.

Military and naval men who have developed tuberculosis are already applying for places in the town of Rutland where the number of proper accommodations for such people is quite inadequate.

With such endorsements I feel that private philanthropy can find no better outlet than in supporting this admirable and much-to-be-desired scheme. Its hoped-for consummation in the comparatively near future will be another step towards making Rutland the Mecca of New England, towards which tuberculous patients will turn their faces more and more. It will be another milestone in the steady progress Massachusetts has made in anti-tuberculosis work in the last quarter of a century.

Lack of time prevents me from discussing many problems of interest in our work, but I wish now to touch upon one subject of importance which, in the study of tuberculosis, comes under the head of what we call "preventive measures"; viz., open-air schools. With our knowledge, obtained by long experience, it would seem to be a foregone conclusion that fresh air pushed to an extreme degree is not only beneficial in adult life to the pronounced tuberculous patient, but quite as much so to those who show symptoms of lowered vitality in child life when the groundwork of subsequent trouble may be present. In spite of the fact that, for some not well-explained reasons, a few open-air schools both here and elsewhere have been closed after trial, we find that the opinion of observers of large experience, and whose judgment can be relied on, is unhesitatingly and enthusiastically in favor of such schools. Two of those best known in our own State are situated at the Westfield Sanatorium and at the Sassaquin Sanatorium in New Bedford. In a recent correspondence with Dr. Henry Chadwick of Westfield, and with Rev. William B. Geoghegan of New Bedford, I find them both warmly in favor of such schools as a result of their experience. Although Dr. Chadwick is apparently conservative as to the wisdom of subjecting children to the severest cold of winter, yet the system, as used at Westfield, allows the freest circulation of outside air in the rooms by opened transoms, with artificial heat to temper the cold, thus enabling the children to use their hands and bodies with greater ease and comfort. In New Bedford, the success of the school at the Sanatorium is such that Mr. Geoghegan, one of our most active members, is a thorough believer in establishing open-air schools in the city itself where all children who show lack of vital power shall be placed. My own opinion, based on an experience of over twenty-seven years with sanatorium treatment, has long since convinced me that such methods should be established far and wide. At the Sharon Sanatorium, hitherto used for women only, through the generosity of friends, a new Children's Pavilion is about to be opened as a combined sanatorium and school for children between six and fourteen years of age, who are either showing a lack of vitality or who have already symptoms of glandular or early pulmonary tuberculosis requiring close supervision and treatment. In spite of occasional attempts to prove by comparative statistics that children do no better under such conditions than in so-called "well-ventilated schools," the atmosphere of which is often atrocious, concrete instances of facts proving the contrary are more convincing than columns of figures. In support of this, I should like, in closing, to quote from a letter received last year from a former graduate of the Sharon Sanatorium, who, after a brave fight for three years, left Sharon seventeen years ago to resume her place as teacher in a public school in one of our large Massachusetts cities. She wrote: "You will be glad to hear that in the last fifteen years I have scarcely lost a day from my teaching, and, more than this, I always impress upon my children the value of fresh air as taught me at Sharon. This winter I kept my schoolroom windows open all the time and not one of my scholars was kept at home with a 'cold,' as against epidemics which occurred in most of the schools in my city."

Evidence like this, which is not exceptional, teaches one to be very chary of accepting theoretical arguments *pro* and *con* which are not based upon practical knowledge and experience.

I trust that these opinions may be of use to our League in urging the adoption of similar methods throughout our State and elsewhere.

In conclusion, I wish to call the attention not only of our own members, but of the public generally, to the great work of the National Tuberculosis Association and to the necessity of generous support from the citizens of the United States. The recent call for aid should meet with generous response on every side. By becoming a member of the National Association, for $5.00 a year, one may feel that he is doing his small share in bringing under control the disease which still causes the largest mortality list in the world.

Adequate Community Organization for Health Educational Work.

By Mary A. Abel, Framingham, Mass.,
Educational Assistant, Framingham Community Health and Tuberculosis Demonstration.

The writer of an editorial in a recent publication said in regard to the repeated use of the word "intensive," that, after all, it simply meant doing things "well"; that in the effort to use the newer word more often the force of the other simpler and older word was lost sight of. We are apt to think that we are doing things better than usual or in a new way when they are merely being done well.

It is this well-done method which every anti-tuberculosis organization in the country seeks to see carried out in its own community,—a method which will, in its educational work, reach every man, woman and child of all stations. Nor has the program rendered the highest usefulness to the community until it has, acting as a dragnet, turned up every possible means of educating the public.

A thorough piece of organization for the purpose of educating the public in the different phases of anti-tuberculosis work will use every available grouping of society, every agency, every line and channel in spreading the gospel. There will be found a distinct channel for every group of individuals through which they can be reached and, failing every other means, personal evangelism comes into play. This is a slow process, however, though certainly the most valuable; but it is difficult to imagine a man, woman or child who has not in some wise a community connection. Those homes, for instance, not represented in the school census will have connections with organized societies, those not in industry have other contacts, and so on.

Upon sensing the personality of any community it will be found that every village, town or city has certain agencies, more or less perfectly organized, available for publicity purposes. The schools, churches, newspapers; organizations of all kinds—including social, religious, fraternal, education, business, and philanthropic; the theatres, billboards, business houses, public buildings and factories are some of the more usual ones, and almost every town will certainly yield some or all of these. These should come in for their share, and no scheme is complete without having tried out fully their resources.

It seems to me we do not realize the incompleteness of our work until we have made a complete catalogue of the many avenues at our command. Because of personal experience right here I venture to say that the average worker, no matter how well she knows her community, will be appalled at the amount of organized material there is ready for her use. In a survey of the organizations for women and girls exclusively in Framingham we were amazed to find they numbered sixty. Think of the valuable material already amassed and of the possibilities for work with that group alone!

That brings us to one of the first and most important steps in any educational scheme,—the tabulating of data concerning such organizations as may be used in educational propaganda. It is difficult to estimate the value of such information to a worker. In Framingham we prepared an outline questionnaire called "Know Your Own Town," dividing it into chapters dealing with the history, government and finance, housing, health, recreation, industry, immigrants, child welfare, delinquency, charities and organizations of the town. This was turned over to the principal of the high school, who, in turn, divided it among the various classes in the school according to their particular study. Thus to the class in civics was given the chapter on history and government, to the science class that on health, and to the physical culture classes the subject of recreation, etc.

The subject of health was accented, of course, and this piece of work has introduced us and our scheme for health to practically every high-school student in town. In addition to the knowledge every student is going to get out of doing this piece of investigation, when published the pamphlet should form a valuable index for the citizen who wishes to know his or her own town.

That was our first entrée into the schools, followed by the second piece of educational work,—that of forming Health Crusader Clubs in every grammar grade of all the schools, beginning with the fourth grade. To you who have not initiated the movement in your town, I wish to say that, in my opinion, a very valuable opportunity is being neglected. The "playing a game" spirit in the Crusader organization makes it attractive to the child; all the time he is forming those very valuable health habits which will remain with him. The teaching of simple good health and hygiene habits to children is one of the most vital things in all anti-tuberculosis work.

The eight health chores the child agrees to do every day are such simple things as brushing his teeth, drinking a certain number of glasses of water, washing his hands before every meal, being in bed a required number of hours and keeping his windows open in his bedroom. He is given credits on his score card for every chore he performs, and there are honors in titles and pins, which act as incentives.

Can we not imagine the vast value to the anti-tuberculosis worker in having the children of a community trained and educated in matters of health. Since tuberculosis in its incipiency is largely a disease of young life, the emphasis on healthy habits must certainly be placed there. The work is made easy and more pleasant than other lines of work by the very reason of the plasticity of the material with which we are working. You who have had difficulty in persuading, begging, bribing or teaching an adult patient the use of a sputum cup will appreciate the difference between that labor and the joyful work with the children. Again and again, teachers in the grade schools tell me of children who try to anticipate the time for marking their chore cards. They are so eager to check up in the morning the score for the day previous that they ask to have that put first in the day's schedule.

Meanwhile who shall say the children are not educating the elders in their homes? One mother came to me with an anxious look on her face and said, "Is it necessary for my boy to drink four glasses of water *every day?* He is trying so hard to keep the chore card, but I am afraid all that water will give him floating kidney." She seemed really relieved to know it probably wouldn't.

While the Crusader organization is invaluable, there are other educational measures needed among the children. Some of the Health Plays published by the National Association for the Study and Prevention of Tuberculosis are excellent and are not to be neglected in work with children. The teachers are glad to have these, since very little is required in the way of scenery and make-up. A list and description of these can be secured from the National Association office. If used in connection with the Crusaders, it serves to fasten the children's interest.

Some pertinent findings in our Framingham experience have taught us that continuous publicity, through the clubs and lodges, the newspapers, the churches and the factories, is the policy we must pursue. We should see to it that every club and organization have a member appointed regularly to give our news at the meetings. We ought to get our matter to the "current events committee" in every club, so that it will have place and standing with other news of importance. Newspaper material should be regular and not spasmodic. Generally, the local newspaper will be glad to furnish a specified space weekly if not daily. The churches furnish valuable material by the very personnel of the membership. The co-operation secured from them on Tuberculosis Sunday shows where they stand in regard to helping on the big job of getting over to the public the message that tuberculosis is preventable and unnecessary.

In Framingham we are ready to issue a series of ten posters of large size, printed in attractive colors for distribution in the factories. These will be distributed in serial form and each one will carry some eye-arresting phrase. The worker in industry must not be neglected, and the educative force of seeing every time he enters or leaves the shop some line about his health may do more for him than talks or books could ever do.

The theatre is a potent force, although it cannot be used as often as other agencies, especially in tuberculosis work. When it can be secured, a slide run in occasionally at the moving pictures houses will pay for itself many times over.

In Framingham we have developed a very thorough organization of the community for educational work with the Demonstration by means of lay committees which cover the entire town. It has been our aim in this to keep the machinery as simple as possible, so we have divided the town into seven districts which include our rural population. Our plan has been to ask some one man or woman on each street to represent a street for the Demonstration in such matters as birth and sickness reporting and general educational work. It can be readily seen how in this manner we can get in touch with every section and street of the town and come to know the people as we could not in any other way. By knowing the committee members personally and intimately we feel assured of a sympathetic coöperation. Much time has been put into educating the committee member beforehand and in assuring ourselves that she or he really understands the purpose of the Demonstration, and the big part they play in it. The committees number from twenty-five to fifty, according to the population of that district, and there is one chairman who represents the entire district in the Advisory Council of the Demonstration. The membership is mainly composed of busy people, so there is no intention of having regular or frequent meetings. The big fact in connection with the plan is to know that here we have an interested, intelligently informed group of people who will assist the Demonstration at any time as the need for special work comes up.

The personnel of the committees is interesting, and much time has been spent in their selection. The appointing of an unpopular resident on a street would be met with disastrous results, and the aims of the work defeated. This is especially true in those sections populated by foreigners, such as Italians. Sometimes many calls will be made on a given street before the right person can be found, but this loss of time is probably justified in the end. Running through the file of these names under the first letter of the alphabet we find listed a most diversified membership: Here is a nurse, an engineer in a foundry, a Normal School senior, a retired business man, a busy mother, a young Jewish immigrant, a clerk, a street car motorman, etc.

As each district committee becomes familiar with its section's particular problems, they will interpret them to us. In the first district organized the committee felt that the need for cooking demonstrations was greater than anything else, so accordingly the Domestic Science Department of the Normal School located at Framingham, was called upon for assistance and have been doing group work in the selection and preparation of food. Another district feels the need for home nursing and first-aid courses, and they will be taken up by the physicians and nurses from the Demonstration staff. In another district the work will probably be infant welfare work, and so on, as the various sections express themselves and their needs to us.

In Framingham, since the Demonstration is more or less temporary and its accomplishments, therefore, somewhat limited, we feel that one of the most important results, and one where we will make our biggest impress on the town, will be through the use of this intensive method of organization. If we can leave behind, as one of the results of the Demonstration, a community thoroughly organized to fight tuberculosis and intelligently alive to the necessity for keeping awake public consciousness, we will have given Framingham the very highest and best service. If we can have intelligent citizens to fight for the eradication of tuberculosis, we need have no fear for the future fight against the disease.

Relative Values in Anti-Tuberculosis Work.

By Professor C. M. Hilliard, Boston,
Associate Professor of Biology and Public Health, Simmons College.

The tuberculosis problem is one of the most complex and confusing of all public health problems, having many aspects which appeal in their relative importance with different emphasis to workers who may be specializing in their respective fields. It seems worth while, therefore, to attempt an analysis of the salient features of the campaign for the prevention of this scourge, and to try to attribute to each factor a certain weight which will indicate its relative importance. Such a method has been applied with great success to the general problem of public health work by Dr. Charles V. Chapin, George C. Whipple, Franz Schneider, and others, and it seems quite likely that a more intensive analysis of the problem of child hygiene, infant welfare, tuberculosis, and other health problems will throw light on what our course of procedure should be in the future. There is always a strong tendency for scientific progress to outstrip the practical application, and our whole knowledge of communicable disease, and the science of prevention, is so new and is growing so rapidly that we should frequently make an inventory to see where we stand. It is this idea which I have in mind when I attempt the difficult problem of contrasting the importance of different factors in the anti-tuberculosis campaign.

Tuberculosis has been the most important cause of death amongst civilized peoples as far back as we have reliable vital statistics. For this reason it has probably received more attention from the medical and sanitary professions than any other disease. Its prophylaxis may be compared with the different stages in the development of our knowledge of communicable diseases. The infectious nature of tuberculosis was established by Villemin in 1865, almost two decades before the discovery of the tubercle bacillus by Koch. Prior to that time the nature of the disease was shrouded in mystery, it being looked upon as an hereditary disease, or as due to peculiar and unavoidable conditions of surroundings. With the definite knowledge of its communicability and with the accompanying sanitary awakening in England, which rapidly spread to other civilized nations at this time, a new epoch in combating the disease arose. It became apparent that this disease, as others, was associated with filthy human surroundings, and the attack was made in a hit-or-miss fashion upon dirt and decomposing matter.

With the demonstration of its specific etiology (1882), a new era arose. The foci of infection were very apparently associated with human beings suffering from the disease, and the hope was raised that at last a means of eradicating the disease had been discovered by preventing the spread of the germ from these centers. But in the last decade of the 19th century emphasis was being more and more concentrated upon cure. The establishment of the first sanatorium at Saranac by Dr. Trudeau in 1885 blazed the way to this new era, and the results which were immediately forthcoming were of an exceedingly hopeful character. It was definitely demonstrated that under the treatment given at sanatoria improvement of the patient rapidly followed. Still another element was added about this time (1890) by the discovery of tuberculin, and for a time it seemed as though a specific curative treatment would solve the problem. At the opening of the present century, a new appreciation of the social aspects of the disease arose, which led to the inauguration of the personal contact of the anti-tuberculosis worker with the patient in his home. I refer to the inauguration of the public health nurse in 1904, although it is worth noting that in 1899 two medical students under the direction of Dr. Osler had done house-to-house work for the sake of educating the patient and family, and of putting the patient in contact with the proper organized social relief. (Gardner, "Public Health Nursing," p. 25.)

If we examine the death rate from tuberculosis over a long period of time and with large enough groups, the hopefulness of the measures that have been tried is not altogether inspiring. We find that tuberculosis has been on the decline as a cause of death for generations, and, as Pearson has pointed out, in England, at least, the rate of decline is less rapid during the last thirty years than it was during the previous thirty years. The discovery of the tubercle bacillus, the inauguration of the sanatorium, and even the recognition of the social and economic nature of the disease have not brought about any general measures which result in a sharp decline at those periods. It may well be argued that none of the measures has been tried on a sufficiently extensive scale to be a true measure of the prophylactic value of any one of these methods, and that is doubtless true up to a certain point, for we find in those cities and states where intensive work has been done that the death rates show a much sharper decline than for average and large populations. We might well say the decline in tuberculosis would result in spite of all of our prophylactic measures, rather than as a result of them.

At the present time, we are confronted the world over with conditions which may well be expected to raise the prevalence and the death rate from this terrible scourge. In fact, Newsholme has pointed out that in England and Wales the death rate from pulmonary tuberculosis during 1915 and 1916 is 12% greater than in 1913. (*Lancet*, 1917, ii). Newsholme states that "The experience in this country appears to coincide with that of the continental countries engaged in the present war." We are all familiar with the appalling situation in France as indicated by Dr. Biggs' report. The same thing is already indicated in the death rates in New York City from this disease, where the rate had steadily declined from 1.81 in 1910 to 1.50 in 1916, but showed a marked increase in 1917. The first eleven months of 1916 showed 7685 deaths; for the same period 1917 there were 8092 deaths from pulmonary tuberculosis. Dr. Kerr, health officer of Newcastle-upon-Tyne, likewise indicates the trend of this disease and states "that considerable increase in the number of deaths among that section of a civil population which has been especially affected by the new conditions of life brought about by the war, namely, girls at ages between 15 and 20 years," is shown.

The total deaths from pulmonary tuberculosis are shown from the following table by Kerr:

	ESTIMATED POPULATION	DEATHS
1913	271,295	326
1914	271,523	375
1915	278,107	380
1916	272,259	407
1917 (January to June)	?	246

It becomes doubly imperative, then, that we should expend our energies in the present emergency in the most fruitful manner.

The prophylactic measures used to combat tuberculosis may conveniently be classified under four general headings: the prevention of infection; the cure of the disease; the predisposing factors; and public health nursing. Before we try to weight these various factors, we may well go into a consideration of each in some detail.

INFECTION.

The overwhelming evidence at the present time is that the tubercle bacillus is an almost ubiquitous organism in the body of man. The well-known investigations by Naegeli showed that upon necropsy at least 99% of persons harbor this microbe in their bodies by the age of 30. More recent work by Reinhardt in Switzerland demonstrated 347 out of 360 consecutive autopsies, or 96%, to be tuberculous. The von Pirquet reaction confirms in general the results that are found after death. More significant, possibly, is the early age at which infection occurs. In New York, in 1320 autopsies of children under the age of 5, 13.5 showed more or less generalized tuberculosis. According to the cutaneous test, which is generally admitted to be fairly reliable in children, from 80 to 90% seem to have contracted the disease before the 14th year. Knopf (*New York Medical Journal*, 1917, cv, p. 1181) gives the following analysis for the age at which infection occurs:

	LOWEST	HIGHEST
Under 1 year	1%	9%
1 to 3 years	9%	50%
3 to 5 years	27%	75%
6 to 10 years	34%	75%
11 to 15 years	12%*	94%†

* Private patients. † Hospital patients.

Without giving further figures which might be abundantly quoted, it becomes apparent that the problem of absolutely preventing infection during life is a vast one, and since relatively so small a number of persons acquire the disease in its active form, it likewise leads to the conclusion that infection is perhaps not the solution of the problem. An organism which is so generally distributed and seeded in the human race as this is almost as difficult to eradicate as the colon bacillus, which appears in the intestines of the newly born babe usually a few hours after birth; or mouth streptococci, which are likewise found in the mouth very early after birth.

The mode of infection in this disease is somewhat obscure. The tubercle bacilli which infect man seem to have two primary sources: the discharges from the lungs of the tuberculous, and animals suffering from the bovine type of bacillus. As to how the organism enters the body is subject to controversy. The older theory regarding aerogenic infection has been supplemented by the ingestion theory. Doubtless, infection may occur by the direct inhalation of fresh dry, and pulverized sputum found in dust, or in sputum particles ejected during coughing and spitting, but organisms taken in this manner into the nose and throat may quite likely, instead of going directly to the lung tissue, penetrate through the tonsils, and be conveyed to their final destination via the lymphatics, or they may even be swallowed, and enter through the intestinal tract to the mesentery glands, and may be transported from there to the lungs. It seems more easy, now that we know about the scarcity of pathogenic microbes in the air and their survival here, that tubercle bacilli more commonly are taken into the body with food or upon articles that are infected with sputum. Infection by the alimentary portal has been demonstrated to be a possibility, and it may enter without leaving any trace as a primary infection. The common location of the primary infection in the apex of the lungs suggests other than the respiratory passage. Referring to the organism which comes from animal origin,—notably cows' milk,—there is no question but what its common path of invasion is through the alimentary canal. This type of disease is most common in children, and is easily preventable by the routine practice of efficient pasteurization of all milk.

The prevention of infection, then, resolves itself, first of all, into the problem of preventing the contamination of surroundings with sputum and saliva. The anti-spitting ordinances are a beginning in this line of prevention, but vastly more important is the general education of people to the importance of other means of exchanging saliva. Masses of sputum expelled to the ground or floor, even in public places, are much less liable to return to persons in fresh form than as though this material were sprayed into the atmosphere in coughing and sneezing, or were smeared by fingers upon trolley straps, door knobs, counters, drinking cups, and eating utensils, or upon food, such as bakery products.

The danger from these latter sources is indicated by the recent study in New York City, where an intensive examination of food handlers revealed that out of 1748 persons "there were 10 cases of active tuberculosis, 12 of suspected and 3 arrested tuberculosis." The early diagnosis of cases to prevent active foci of the disease, the hospitalization of active cases, thorough disinfection of the discharges, proper instruction of both patient and attendants and exposed persons, and the exclusion of the tuberculous from employment in industries involving the handling of food, aid in preventing the spread of the disease. We emphasize these things in spite of the fact that we have indicated that to avoid infection during lifetime is rather hopeless, because we definitely understand that repeated infection and massive infection may at any time be a danger.

CURE.

That tuberculosis in its early stages is a disease that may be arrested, and perhaps permanently arrested, is a well-demonstrated fact. Cure, in the sense that the bacilli may be eradicated from the body, is conceded to be quite improbable. The secret to the cure of the disease is its early detection, and any measures that will encourage the early detection of the disease are not only in favor of the patient, but in favor of the public health. The encouragement of routine physical examination for school children, for adult employees, and for all persons is an anti-tuberculosis measure of first magnitude. We should discard the secrecy that surrounds this disease and should report it frankly to public health authorities, to the family, and to the patient himself, immediately the suspicion arises. To conceal the disease from the patient or from others is to deny the opportunity for cure and subsequently to endanger the public health.

With the discovery of tuberculosis in the patient, proper instruction and proper facilities for the treatment should at once be found. We are laying less and less emphasis upon the importance of climate, latitude, and altitude, and more and more upon rest, and cheerfulness, and successful nutrition of the patient. Out-of-door air is apparently quite as good for tuberculosis patients in New England as it is in

Colorado. The cure has a psychological element as well as physiological. The sanatorium, likewise, is not indispensable in the program for cure, although each case must be considered separately in this regard. Fishberg (1916) says: "It is shown that institutional treatment is not the only, nor the best method of caring for the majority of patients." If the case is not yet a menace to the family (with the exception of cases where the facilities cannot be devised for home treatment) they should be encouraged to remain at home. The sanatorium is for the very poor and the ignorant, primarily. Out-of-door schools, not only for recognized cases, but for all children with poor physique, should be rapidly extended. The tuberculin treatment would be included as a hopeful item by many, and with our increase in the knowledge of administering this agent it may become an important item.

PREDISPOSING FACTORS.

Vigorous physiologic defense is the secret in combating tuberculosis, and social and economic factors play the largest part in the maintenance of high resistance. Granting the presence of a benign and almost universal infection with tuberculosis, the occurrence of the disease in its active form, chiefly in the age period from twenty to forty, must be explained either on the basis of radical reinfection between these ages or to a flaring up of the latent lesion into an active form. The habits of life and industry at this time seem not to afford unique opportunities for further or more massive infection. At this period, however, the entrance into industry, the intense ambition to acquire position, power or money, and the increased exposure to temptation all lend to cumulative fatigue and lowered power of defense. "Chronic fatigue, whether from excessive toil or excessive amusement; disordered metabolism, whether from starvation or over-indulgence; anxiety, whether due to religious fervor, business emergencies or games of chance, all are predisposing factors."*

The general predisposing factors of a social and economic character are so numerous that it will be useless to attempt to consider them all separately. Broadly speaking, all factors that lead to fatigue and depletion contribute to tuberculosis. We shall discuss a few predisposing factors specifically. Inheritance, both racial and family, plays an important part. In relation to prophylaxis, however, but little can be done through heredity. In families where tuberculosis is known to be present in active form, restriction of the increase in the family might be discreetly urged through legislation and through education; and marriage between parties, one or the other being tuberculous, may be prevented.

Malnutrition, especially among children, is a most important item. We learn from a recent number of the New York City Weekly Bulletin that approximately one-eighth of all school children in the city are undernourished, or 125,000. We need only to look around us to see the perpetual demonstration of how common insufficient nutrition is in the human race, and to appreciate that a vast problem confronts us here which plays its rôle in tuberculosis. The present status of the food situation in America and throughout the world is rather discouraging from one standpoint, but from another, namely, that for the first time the public is being informed as to what constitutes an adequate diet, it is, perhaps, encouraging. At this time let us make sure that we feed our infants and our growing boys and girls well.

Alcoholism, other drug addictions, and all excesses tend towards tuberculosis.

Tuberculosis has been called an "occupational disease," and the more we learn of the relation of tuberculosis to industry the more we appreciate the truth of this. This is very hopeful because most of the industrial conditions that predispose to tuberculosis may be corrected. The trades which are most dangerous are: first, all of those which expose the worker to dust; secondly, those where bad air, excessive heat, and noxious gases occur; and, finally, the occupations where the poor posture and close confinement are common. Dr. Crumb, in analyzing the Prudential Life Insurance Company's experiences, finds that in dusty trades the death rate is from twenty to thirty per cent. higher than in non-dusty occupations for all workers. In an exhaustive study of the factors contributing to the incidence of tuberculosis in Cincinnati, Robinson and Wilson conclude that occupational hazard is one important contributory cause. The elimination of child labor, minimum wage scale, health insurance, and other sociological industrial elements are highly important.

There are certain diseases which directly predispose to tuberculosis, which are themselves preventable. Typhoid fever is most significant in this respect. In a notable paper Dr. Woodruff has shown the parallel decline in typhoid and tuberculosis in many countries. The past histories of sanatorium inmates show that they have suffered from typhoid fever in excess of the general population. All acute or chronic diseases lower resistance and throw wide the portal to the tubercle bacillus. Pertussis, measles, and scarlet fever seem to render children particularly liable. General sanitation and disease prevention are, therefore, weapons against tuberculosis.

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* Smith: Jour. A. M. A., lxvi, pp. 77-82.

Housing conditions are usually included as predisposing causes. House infection in the sense that the house becomes infected and seeded with tuberculous bacilli, and that infection is contracted readily because of such conditions, probably is not important. It is, however, certainly true that tuberculosis increases in direct ratio to number of persons per room. Bad housing goes hand in hand with poverty, poor human protoplasm, ignorance, alcoholism; and tuberculosis is the result of a long sequence of conditions rather than the room or house.

Poverty itself is a predisposing cause. If we could eradicate poverty we should go a long way toward eradicating tuberculosis. We usually state hopelessly that the poor are always with us, and to combat poverty is to combat the foundations of society, and with its eradication would come the millennium. Much can be done in the way of eradicating poverty by education, the minimum wage scale, the social and health insurance, institutional aid, and brotherly love.

PUBLIC HEALTH NURSING AND EDUCATION.

We now come to the last of the four items which we are to discuss, and, historically, we find that it is the latest to develop. Public health nursing in relation to tuberculosis has the following objects: prevention of the spread of infection and detection of new cases; the instruction and nursing of patients at home, coöperation with agencies which may help the patient; assistance at clinics and dispensaries. We see at once that her work is very broad; that it is chiefly social and educational, ameliorating those factors which we have insisted upon before as being most important in the anti-tuberculosis work. Dr. McLaughlin has said that "dollar for dollar the public health nurse will give more for the money than any other single agent," and this is emphatically true in tuberculosis.

Education is the keynote to the nurse's work. It is by gradual, quiet instruction that she teaches the patient how to avoid infecting the environment, and the family how to protect itself. It is through instruction rather than nursing, which is really only in the form of a demonstration, that the patient is given the proper care at home. The finding of new cases is, of course, to give the patient the benefit of early treatment and the community the opportunity to rid itself of one dangerous focus of infection. The nurse seeks to place patients and families in contact with clinics, hospitals, and sanatoria when the need arises. She helps the discharged patient to rehabilitate himself, and is on guard for recurrence of the disease. Her work in relation to the health supervision of school children is recognized as indispensable. In combating tuberculosis in rural communities, the nurse is the strategic element; in fact, the only agency which has appeared. Her services are too little appreciated and too few facilities, as adequate facilities for travel, are given her to perform efficiently her tasks. The work of the medical social service worker, the industrial nurse and the infant welfare nurse verges upon, and, in fact, is a part of the anti-tuberculosis program. We cannot lay too much emphasis upon the hopeful character of the nurse's work in the campaign for reducing the scourge.

We now approach the difficult task of assigning the relative numerical values to the different factors which we have discussed. In its entirety the tuberculosis work is rated at 14% of the total by Chapin, as 12.1% by Schneider. In the effort to get an accurate measure of the influence of any one, or any group of these factors, we have been unable to work out a mathematical system. The figures simply represent an arbitrary weight. The items obviously overlap, sometimes one measure being worthless without another, as in the detection of new cases, reporting and subsequent treatment. From the preventive viewpoint, to recognize the case early is more important than the sort of treatment rendered. The weight of a given factor or agency has been considered from its response to corrective measures as well as the number of cases of the disease involved. Thus, racial inheritance may play a large part; poverty is the very background for tuberculosis, and yet neither responds easily to applied prophylactic measures. Dusty trades, though not involving any large proportion of all cases of tuberculosis, are largely preventable. The nurse's work is a corollary of most of the other items listed, and her influence would be nullified in the absence of the clinic, the "preventorium," and other agencies.

The educational work of the public health nurse ranks first in prophylaxis. Unlimited protection from infection in early life, arbitrarily, up to the age of four years, and the control of the elements of malnutrition and fatigue each rank high in our estimate, these four items totaling nearly one-half the total score. It is our feeling that if those elements that are weighted high are emphasized the lesser factors will automatically fall in line.

Relative Values in Anti-tuberculosis Work.

Avoidance of infection			20
Unlimited protection up to 4 years		10	
Hospitalization of open cases		4	
Promiscuous spread of infection		3	
Anti-spitting	.5		
Anti-sputum (education)	2.5		
Bovine tuberculosis		3	
Meat inspection	.1		
Health cattle and clean milk	.1		
Pasteurization	2.8		
Detection and cure of tuberculosis			16
Early detection		7	
Prompt reporting		3	
To authorities	1.5		
To patient and family	1.5		
Modern treatment (home or sanatorium)		4	
Open-air schools		1.9	
Tuberculin		.1	
Elimination of predisposing causes			39
Avoidance of fatigue		10	
Adequate nutrition		10	
Alcoholism		.5	
Occupation		5	
Dusty	3		
Other atmospheric conditions	1		
Posture	1		
Preventing other diseases		5	
Good housing conditions		1	
Ameliorating poverty		7	
Inheritance		.5	
Public health nursing			25
Educational work		15	
Assistance in detecting and reporting cases		3	
As a social agent		2	
Infant welfare		2	
School nursing		2	
Industrial nursing		1	

Annual Report of the Massachusetts Anti-Tuberculosis League, 1918.

By Ethel M. Spofford, Boston,

Acting Secretary.

In the absence of our Executive Secretary, Mr. Seymour H. Stone, who has been granted an indefinite leave of absence for the duration of the war and is now associated with the War and Navy Department Commissions on Training Camp Activities in Community Organization, I am going to give you a summary of the year's work.

EDUCATIONAL AND PUBLICITY.

During the last year almost 27,000 pieces of literature were distributed. This large amount is due to a new leaflet, "Facts for Fighters," which was prepared especially for enlisted men and sent to the Massachusetts cantonments and exemption boards wherever there was a chance for distribution. A set of six educational articles on tuberculosis, to be used for copy in schools of stenography, were purchased by the League and are gladly furnished to any schools who would care to use them. Over 6000 Press Bulletins from the National Tuberculosis Association, mostly dealing with tuberculosis, were sent to city and state newspapers. A booklet on sleeping and sitting out was sent to medical men and others interested in tuberculosis. The balance of the literature distributed included circulars and pamphlets of an educational nature, programs and reports of the annual meeting. Along the lines of educational work, it might be added that our President was very successful in arranging a series of lectures given by men well known in the medical profession to the military doctors at Camp Devens. These were very well received. The question of lecturing to enlisted men came up, but the League was of the opinion that it would be a mistake for civilian doctors to endeavor to address the enlisted men. During February and March this year the League was glad to coöperate with the National Association in its membership drive to obtain 5000 new members.

LEGISLATION.

There were few general bills of importance before the Legislature of 1917 of immediate bearing on tuberculosis, and the same is true of the Legislature of 1918.

Probably the most important measure affecting tuberculosis was one passed by the 1917 Legislature, allowing the State Board of Charity to pay ten and one-half dollars for state cases needing hospital care. Indirectly, this has been of great benefit in the tuberculosis campaign because many of the towns or cities refused to care for the state cases in the local hospitals, rather insisting that they should either go to the sanatoria or the State Infirmary at Tewksbury, because the former payment by the State of seven dollars was in no way sufficient to recompense the cities for the care of these state charges, the result being that many of the patients have refused to go to Tewksbury and have, consequently, remained in their homes, a menace to members of their families. This distinction of state patients, and the necessity of gaining a settlement in the towns in which they reside, should be done away with, and anybody who has been in a town long enough to acquire the privilege of citizenship should become a charge upon that community.

The so-called Incorrigible Consumptive bill before the last Legislature was defeated. It has been re-presented and will probably be reported upon favorably to the present Legislature by the Committee on Public Health, and it is hoped that everyone here will impress upon their representative and senator that this is a bill worthy of support.

The Legislature also passed a bill extending the subsidy for tuberculous patients not having bacilli in their sputum, providing that after a survey of the city that it is demonstrated to the Department of Health and Trustees of Hospitals for Consumptives that the city was providing adequate care for its open, advanced cases of tuberculosis. Under this bill the city of New Bedford has, after a survey, been granted permission to care for non-bacillary cases above the number of seventy-five. That is, the survey disclosed that in all probability seventy-five cases of advanced tuberculosis was the quota which should be expected from the city of New Bedford, and the twenty-five to thirty beds above this number can be filled by approved, non-bacillary cases, and the subsidy granted. Thus, by this survey, New Bedford has been put into the front ranks of municipalities caring for its tuberculous patients.

Another bill of importance has been passed by the present Legislature, which provides that all prisoners sentenced to more than thirty days' confinement must have at once a complete physical examination. This must ensure, I think, the discovery of a large number of cases of tuberculosis and the consequent transposition of these cases to the tuberculosis camp connected with the West Rutland Prison Camp, thus doing away with deaths of people from tuberculosis in the jails throughout the Commonwealth. This bill is also of importance to all those interested in the suppression of social diseases.

A bill was introduced into the Legislature, providing for the abolition of the Trustees of Hospitals for Consumptives, and the transfer of the administration of the hospitals to the Department of Health. As the Department of Health is an executive and scientific department, the bill was opposed by the Trustees and the Commissioner of Health, and at the present time has been reported adversely upon by the committee to which it was referred.

An amendment to the County Hospital bill has been introduced, by which the erection of county hospitals, securing of sites, etc., may be postponed until one year after signing the treaty of peace. This amendment has been prepared by the smaller towns in Worcester County, who have argued for it because of the expense of building at the present time. This amendment having been admitted by the Rules Committee, is under consideration by the Public Institutions Committee at the present time. It should be opposed. Several of the county hospitals have secured sites and prepared plans which have been approved by the State Department of Health, and have, in some instances, started construction. The Barnstable County Hospital has been completed and will be opened publicly in June. The city of Lowell has also very nearly completed the construction of its long-delayed institution.

The Legislature has granted the State Department of Health an appropriation whereby eight nurses are to be employed as assistants to the District Health Officers. These nurses will oversee the after-care work in their various districts, and, to unify and centralize their procedure, Miss Bernice M. Billings, who has been After-Care Worker for the Trustees of Hospitals for Consumptives, has been transferred to the State Department of Health and will be Director of this portion of the duties of the new nurses.

LECTURES.

During the year 29 lectures on tuberculosis and industrial nursing have been given, 7 of these having been given by the Secretary; 6 under the auspices of the Rural Tuberculosis Committee, and 16 by the Secretary of the Committee on Health in Industry. Seven of these talks were illustrated and the total attendance at these lectures was about 2400 people.

SLIDES AND FILMS.

"The Great Truth," a film dealing with the tuberculosis problem, was loaned by the Boston Association to the League. It was used in 5 Cambridge motion picture houses, which showed it at 2 afternoon and 2 evening performances. The League is glad to be able to have the use of this film, and to send it out whenever it finds the chance to place this vital subject before the eyes of the public.

EXHIBITS.

Over 18,000 people in this State have viewed the Health in Industry and Tuberculosis exhibit at various health weeks, fairs, and other public exhibitions. The Health in Industry exhibit is one of special interest to those who wish to further the work of getting the manufacturer and employer in mercantile establishments to conserve the health of their employees. The Open Air School exhibition belongs to the Association and has also been loaned to the League for exhibition purposes.

RURAL TUBERCULOSIS.

The lecture prepared by this Committee on Tuberculosis in Cattle as an Economic and Public Health problem was arranged so that it could be used with 20 slides or read without the illustrations. This year the lecture was given on 6 occasions, at 4 of which the illustrations were used. The Chairman of this Committee, Professor Curtis M. Hilliard, has also given it with illustrations before classes at Simmons College. A letter was sent to about 200 state granges, offering the use of the lecture and slides without expense to the grange, stating that a member of the Grange could read the lecture or that we would be glad to furnish a speaker for them. Responses this year were not as many as formerly. Prior to the annual meeting of the State Grange the existence of this Committee was made known to them and it was stated that the Committee was prepared to help in any problem that might arise on this subject. For the future work an article on Bovine Tuberculosis is to be prepared and sent to the state papers. The League is also planning for the future to promote the work of transporting nurses in rural districts.

HEALTH IN INDUSTRY.

Although no committee has been formed, it was voted at one of the executive committee meetings of the League to extend the work of the Boston Association Committee on Health in Industry throughout the State. The League voted to pay a portion of the salary of the Secretary and her expenses in League territory. This work has steadily increased and Mrs. Staebler, the Secretary, has had many calls to address District and Visiting Nurse Associations, groups of employers and boards of trade on the subject. Whenever a call has been made the League has been glad to have her respond because it means that each employer who is interested will undoubtedly see the wisdom of employing a nurse on part- or full-time service in order to conserve the health of his employees.

RED CROSS SEALS.

Inasmuch as the League cannot solicit contributions in communities where anti-tuberculosis associations are located, it is financed largely by receipts from the sale of Red Cross Christmas Seals. We are pleased this year to report an increase of $551.04 in the net receipts from the sale of these seals, the total number of seals sold amounting to 3,588,452, which were valued at $35,884.52. This makes an increase of 772,211 seals over last year's sales. The expenses of conducting the state campaign were $1,355.47, and those of the League $346.16, the amount sent to the American National Red Cross as its share being $3,379.60. This leaves for use in the subordinate organizations for tuberculosis work $28,003.20, and after the League's expenses are all paid, $2800.09 for its work. The various anti-tuberculosis associations reported that the Red Cross Chapters, Boy Scouts, public and Sunday schools had greatly aided them and to all these the League wishes to extend its thanks in making this sale a success.

MISCELLANEOUS.

The school committee of every city and town is required by law to appoint one or more school physicians who should examine every child reported to them and make a diagnosis in the case. If a child should show symptoms of tuberculosis, the parents and Board of Health should be notified of the disease and the child sent home from school. There is a general belief that tuberculosis in most instances begins in childhood and we hope that the school committee will be vigorous in its follow-up work on physical examinations. It might be well for the various anti-tuberculosis associations to be more watchful in their localities in regard to school instruction upon the prevention of tuberculosis.

War Prohibition was endorsed by this League at one of its executive committee meetings, as well as the war program of the National Tuberculosis Association.

In 1917 there were approximately 5375 deaths from tuberculosis. Of these, 4600 were from pulmonary tuberculosis and 775 in other forms.

There are over 3300 public and private beds for tuberculous patients in the State, and of these, about 1065 are those of the state sanatoria. The new county hospitals, when completed, will greatly add to the number of beds and will take care of many patients who are now a menace to the members of their families while staying in their homes awaiting admission to the various state sanatoria.

Follow-up Work in Tuberculosis in the Small Towns and Villages in Massachusetts.

By Bernice M. Billings, Boston.

With the exception of the after-care of the ex-sanatoria patients, which was started in 1912, there was no serious follow-up work of tuberculous patients in the small towns and villages in Massachusetts until the latter part of 1915. In the three-year period previous to 1915, the Visiting Nurse Associations and the visiting nurses had expressed willingness to assist local physicians in following up the patients discharged from the state sanatoria. In this way very good relationship had been established between the Trustees of Hospitals for Consumptives and the visiting nurse in each community, making the next step in follow-up work comparatively easy.

After the opening of the 54 dispensaries in 1915, the after-care work in these cities and towns of 10,000 and more inhabitants, was turned over to the dispensary nurses. This allowed more time to be devoted to the rural sections of the State. In the latter part of 1915, a conference was held between Dr. Eugene R. Kelley, Director of the Division of Communicable Diseases of the State Department of Health, and the State District Health Officers, with Dr. Arthur K. Stone, Chairman of the Trustees of Hospitals for Consumptives, and the superintendents of the four state sanatoria, and at that time it was arranged that not only the ex-patients from the state sanatoria, but also all patients who had been reported to the State Department of Health in these small towns, should be visited, and a brief history of each patient should be sent to the State Department of Health. This marked an event in developing a definite nursing responsibility toward all tuberculosis patients in remote parts of the State. To assist in working out this general scheme of follow-up work the State Department of Health provided a list of all patients reported with tuberculosis from each small town to which the visitor was going to look up the ex-sanatoria patients. These reported cases covered a period of eight years.

Before visiting the home of tuberculous patients, an interview was obtained with the Board of Health Agent in each town. In the official record books was entered the date of the patient's report to the local Board of Health and the name of the physician who reported each case. These data were transferred to the history card of the State Department of Health. In each instance the physician who had reported the patient was seen in order to ask his advice and to gain permission to visit his patient. It was found that many of these patients had died, and that a large percentage of those who were living were under no regular medical supervision when visited. A history was taken of each patient, instruction in hygiene was given, suggestions were made that the children in the family, who had been exposed to tuberculosis, be examined and the patient when living was urged to return to his physician for examination and advice. If there was a regular visiting nurse in the community the patient was referred to her for home visiting. When patients were found to be living under undesirable conditions a detailed report was given to the private physician, the local Board of Health, the visiting nurse, and the state district health officer. After fourteen months of this work 903 histories were sent to the State Department of Health. It was then found that practically all of my time had been consumed in doing this general follow-up work, there being so few ex-sanatoria patients in these communities. As my work was primarily for the after-care of the state sanatoria patients it was finally decided that my work should be confined to the visiting of the discharged sanatorium patients.

According to the last State Census there are in Massachusetts some 295 towns of less than 10,000 inhabitants. There are 52 towns with a population of from 5000 to 10,000 people. Forty of these 52 towns have the services of a visiting nurse, and in addition 5 of these towns are employing a full-time school nurse. In the smaller communities there are 80 towns with a population of from 2000 to 5000. Twenty-eight of these 80 towns have a visiting nurse, but there are no full-time school nurses. There are 163 towns of less than 2000 population. Five of these towns employ the services of a public health nurse. The financing of this visiting nursing work usually has been made possible by contributions from public-spirited citizens who have given their time and money to this good work. Ordinarily the visiting nursing work is under an association made up of women. Many of the towns appropriate money which is given to the nursing association to further their work, and this has greatly helped the organizations. At the present time in 4 towns in the State the nursing work is entirely supported by public appropriation.

It has been my good fortune to visit the greater number of these small towns, and get a good knowledge of the follow-up work as it is being done in Massachusetts today. I am encouraged by the interest and good will of both public and private agencies, and the helpfulness of private physicians throughout the State. A great drawback to good follow-up work is that we are expecting altogether too much from one nurse. In each of the 40 towns where a visiting nurse is employed, this nurse is trying to do bedside nursing, prenatal and postnatal work, occasionally a certain amount of school work, and attempting to do the follow-up work of the tuberculous patients. The bedside care of the sick must be attended to and in busy times it means that the nurse works from eight to twelve hours a day. In any case it is an injustice to expect a nurse to do instructive work in a day which is already too full. One of the great dangers is spreading nursing work too thin, and when this is done it is always the educational work which suffers most.

I have been told repeatedly in towns where one nurse is being overworked, that in regard to the consumptive patients it is impossible to get them to go to sanatoria or hospitals. This usually proves that the tuberculous patients are not well supervised. If the nurse is a regular visitor the patient and family gradually get to place a great deal of confidence in her judgment. Then when the physician and nurse advise hospital treatment it is not difficult to persuade the patient to make this necessary change. It is also most unfortunate that the physician or town authorities do not send the nurse to many consumptive patients until they are very ill and need actual bedside care. This is due to several things: 1st, lack of coördinating forces of Board of Health, private physician and visiting nurse associations; 2nd, the physician does not realize that a nurse can help him in teaching the patient and family how to follow out his advice and treatment; 3rd,—and quite as important,—the physician knows how much the nurse has to do and that she is already overworked, and for this reason he will not ask her to take on anything extra in the way of educational work.

In our small towns of between 2000 and 5000 inhabitants the nurse is not so badly overworked, and yet in a town of 5000 persons there is certainly plenty of work to keep two nurses constantly employed. In the 5 small villages of less than 2000 persons, where a public health nurse is employed, there is a splendid opportunity to develop the work along the best lines. Many times I am told by men and women living in towns of from 2000 to 3000 inhabitants that there is no need of a public health nurse as there would be nothing for her to do. If a nurse was engaged for one of these towns, and if at the end of six months her days were not full, it would be the fault of the nurse in developing the work, and not because there was no need for her work in the community. With the great distances it would mean that with a few bedside calls, prenatal work, the following up of the babies, visiting the consumptive patients, and possibly an hour in the mill or factory in the town,—and in Massachusetts there is a small factory in nearly every town,—the nurse could not fail to keep busy. Physicians in these towns often tell me how much they desire the help of a trained worker to give intelligent assistance when it is badly needed. In these small communities we do not need a visiting nurse, a prenatal nurse, and a tuberculosis nurse, but we do need well-trained women who will do whatever public health nursing is needed in the particular towns in which they are employed. If in this community the nurse can prove to the physician that she is of real value to him in a time when he needs her, I do believe he will be far more ready to approve of her visiting his consumptive patients and helping them to follow out his advice.

In regard to school nursing, I should like to say that this past winter in one of the small villages of less than 400 persons where I was visiting a consumptive patient I had an opportunity of talking with a woman intimately associated with the public schools. She told me of a child who had eye trouble. The school physician advised that this child go to an oculist, and a note to this effect was sent to the mother. Then came the summer vacation, and in the fall this child returned to school with the eyes in bad condition. It was then learned that she had not been seen by a physician since the closing of school. The superintendent of schools went to the mother, and explained that the child must go to the oculist, and finally the mother consented. After the physician had examined this child's eyes he told the mother that there was no sight in one eye, but he would do what he could to save the other eye. Had there been a public health nurse in this community to follow with a home visit the note which was sent to the home of this child, this unfortunate case of neglect would probably never have occurred.

At the present time there are approximately fifteen of these larger communities which have placed an automobile at the services of the nurse so that she may visit patients in the more remote parts of the town. It is a short-sighted policy which allows the visiting nurse to visit only those patients who are living near the carline.

Berkshire County has a public health nurse who is doing special school work. This should be a great help in stimulating communities to greater activity along the lines of public health nursing.

The Child Conservation Committee employs eight nurses, one in each district of the State. These nurses are planning to visit the small towns and villages in the State, particularly in reference to saving the lives of children.

The State Department of Health is planning to employ eight public health nurses, one under each district health officer. These nurses will devote a part of their time to tuberculosis follow-up work, particularly in the small towns and villages. This, too, should be a great help in proving to the towns the need for public health nurses.

In closing this paper, may I repeat that although we have 73 small towns employing a public health nurse, yet if we wish to have worth-while follow-up work done by these nurses we must give them more assistance. This assistance should be a conveyance, and additional nurses as often as it can be demonstrated in the community that they can be used to advantage. In our country districts, in towns of from 300 to 500 persons, we could use one general nurse to take care of two or three towns. It is said that this nursing work cannot be done in the winter time, but it is only occasionally, and for short periods of time, that the roads are actually impassable. During this past winter I have been through Berkshire, Franklin, Hampden, and Hampshire Counties, traveling from the last of December to the first of March, with poor train service, and making use of horses and sleighs as never before, yet I have been able to reach all the villages in which there were ex-sanatoria patients. These villages were oftentimes miles from the railroad station. Farmers are travelling over the roads constantly, and where the towns-people can go it is perfectly practical for the visiting nurse to make her way, providing she is given transportation.

It might well be a part of the program of the Anti-Tuberculosis League to aid in stimulating public opinion so that we shall cover the most remote sections of the State with public health nurses. It is only in this way that we shall be provided with facilities for doing follow-up work in the homes of tuberculous patients.

War and Tuberculosis.

By Charles J. Hatfield, M.D., Philadelphia,

Executive Secretary of the National Tuberculosis Association.

The very kind remarks made by Dr. Bowditch about the National Association and its Executive Secretaries can be promptly returned, because we all know that the National Association has had very distinguished Presidents, and one of the best of them was Dr. Bowditch.

Miss Beard has referred to the fact that the tuberculosis campaign or public health work generally has received a very great stimulus from the war. It seems that we may well start our discussion of War and Tuberculosis with a recognition of the truth that the war has brought to us a greatly increased opportunity and a greatly increased responsibility. The reason is very plain, since war and disease are always closely associated,—disease following in the wake of war. Through all of the great wars of history the development and spread of disease, even to the extent of epidemics, will be noted. The causes are very simple,—the transfer of large bodies of men from regular methods of life to irregular living in strange and perhaps inclement climates; over-exposure and over-exertion; insanitary housing; irregular and impure food supplies,—all these factors lead to the devolopment of disease. Enteric disturbances perhaps take place at the head of the list. Our shocking experience with typhoid fever in the Spanish-American War is an instance. We find also, in our history of armies, cholera, dysentery, smallpox or typhus fever.

The association of war and disease is serious so far as men are concerned who are actually engaged in military operations. Although perhaps not so evident, the association is even more serious when we consider the health of the civilian population of a country at war. Here also the reasons are obvious,—since in a civilian population there may be extreme distress on account of the destruction of homes in invaded territory, the driving back of great masses of population as refugees, over-exposure and over-fatigue, overcrowding and insufficient feeding. Moreover, even in homes outside of territory directly subject to war conditions, there is distress because of the loss of ordinary means of support and greatly increased hardships in securing the necessities of life. In general, there is a sharp revision downward of the scale of living where such change may mean a cutting off of the necessities of healthful living.

To trace the spread of tuberculosis in consequence of a great war is not so easy as the following up of the more acute and sometimes epidemic diseases. We may not be able to prove that there is an actual and demonstrable spread of tuberculosis, but we have weighty evidence of the increased development and activation of existing tuberculosis. Possibly the tuberculosis has been present before, but it has not been in an active condition, and, therefore, has not been a public health problem until it has been developed or discovered by war conditions.

In the first year of the great war we were greatly disturbed by reports brought to us as to the increase of tuberculosis in France. The record was so startling that the International Health Commission of the Rockefeller Foundation determined to examine into conditions, and commissioned Dr. Hermann M. Biggs of New York to go to France to make a careful survey and to report recommendations as to what helpful assistance might be given. After a very careful survey of the records of the French and also an examination into conditions among the English troops and the Canadians quartered in England, Dr. Biggs reported that the spread of tuberculosis had been astounding; that the development of the disease in all classes of population had been very great and that the nation was in urgent need of help. Dr. Biggs did a very great service to France by recommending a course of action to be taken by the Rockefeller Commission, which consisted in securing a competent Commission to go to France and to institute measures for the control of the disease. Dr. Farrand, the President of the University of Colorado, who had previously been the most efficient executive of the National Association, was secured to head the Commission. As heads of important departments, Dr. James Alexander Miller of New York accepted the direction of the medical aspect and Prof. S. M. Gunn, of the Massachusetts Institute of Technology, accepted the direction of the educational side of the work. The Commission arrived in France in July, 1917, and in less than one year has developed a splendid plan of organization. Its work is closely coordinated with that of the French authorities and also with the Department of Civil Affairs of the American Red Cross in France. When we know that Dr. William Charles White of Pittsburgh is at the head of the tuberculosis work of the American Red Cross, and Mr. Homer Folks of New York is the Director of the Department of Civil Affairs, we can understand how close has been the coöperation between the Rockefeller Commission and the Red Cross authorities. The report of the French authorities, as brought to this country by Dr.

Biggs, has been considerably modified through later investigations. Although the amount of tuberculosis is astounding, its distribution differs from that shown in the earlier records. One point of especial difference has been demonstrated, namely—that army life, even at the front, does not lead to a great increase in the incidence of tuberculosis. On the other hand, there is an impression that the physical condition promoted by army discipline tends to increase the resistance of the soldiers even though they are exposed to trench life. To offset this rather favorable report, it has been established that the incidence of tuberculosis among the industrial classes is very high. Upon the charts shown by Dr. Miller the areas of the deepest black were always points where an industrial population was most thickly settled,—where people had long and hard hours of work and were crowded into insanitary quarters. When America entered the world war, the alarming reports from France tended to direct the attention of the American authorities promptly to the subject of tuberculosis. From the very first the Surgeon-General's office, as the medical agency in charge of the greatest number of men, took vigorous action to prevent the disease in the Army. The National Association also took an active part in coöperating in the plans to free our troops from the menace of tuberculosis and so far as possible to prevent a spread of the disease among the civilian population affected by the war. The action taken by the Surgeon-General of the Army has, of course, been paralleled by similar action by the medical authorities in charge of the other branches of the service. It may be well to take a few minutes to discuss briefly the measures taken by the medical service to prevent tuberculosis in the Army.

One of the first steps was the appointment by Surgeon-General Gorgas of Colonel George E. Bushnell,—who has been for years at the head of the Fort Bayard Sanatorium in New Mexico and is recognized as a distinguished authority on tuberculosis,—as the officer in direction of all measures taken to prevent the disease. In the plans, as they are so far developed, there are four distinct points to be considered.

First, the exclusion of cases of active tuberculosis from the Army; second, the care and education of the men in active service in order to prevent the disease; third, the care of soldiers invalided home on account of tuberculosis and, indirectly, their economic reconstruction, if such a thing is possible; fourth, the consideration of general public health through making known to the health authorities throughout the country the cases of tuberculosis discovered in the draft or developed in the service. Plans to meet each one of the above conditions have been carefully made and are being continuously developed. Intensive study is being given to each phase of the problem. I personally believe that through the careful execution of the plans, active cases of tuberculosis will be excluded from our Army, and we can, therefore, feel a fair degree of certainty that our forces will be remarkably free from cases that are likely to spread the disease.

So far as the exclusion of cases of active tuberculosis from the Army is concerned, examinations before Exemption Boards have been, in general, incomplete and inadequate. The medical examination was casual and hurried. The instructions sent out from the office of the Provost-Marshal General did not place any importance whatever on the examination of the chest, and, therefore, on the discovery of tuberculosis. As a result, the Exemption Boards accepted a great many cases of tuberculosis. When, however, men were admitted to the camps or cantonments, the representatives of the Surgeon-General's office took vigorous action. There was a preliminary examination by the medical staffs; later a thorough chest examination by the Tuberculosis Commissions. The Commissions were appointed with considerable care and consisted of experts in the examination for tuberculosis, recruited, so far as possible, in the neighborhood of the cantonment. For more than six months the Tuberculosis Commissions have been combing over the men who were sent to camp and rejecting those in whom there was an active tuberculosis. The special Commission plan, however, has been somewhat expensive and will be somewhat changed by a recent ruling of the Surgeon-General. Apparently he has decided that the primary examination is to be made much more complete and more satisfactory, and the medical staff of each camp is to be increased by the addition of many of the specialists formerly included in the Tuberculosis Commission. The men who pass the preliminary examination, which will be given, presumably, within a short period after their arrival at camp, will be considered "in line of duty" and fully enlisted. In this way all cases that later develop tuberculosis will be taken care of in the Army. The new ruling is of great importance to those of us who have been attempting to care for the men who have been kept in camps and cantonments for periods up to three months, and when found to be tuberculous, have been discharged without military standing. The injustice of such a proceeding has been finally recognized, and it is believed that the new system will correct it.

When a man has been accepted for service, his protection from infection and his education in personal hygiene will be attended to. In coöperation with extra-military agencies, such as the National Tuberculosis Association, by bringing into play the Y. M. C. A. facilities, a definite campaign of education in the prevention of disease, especially of tuberculosis, has been arranged. The instruction will be made, so far as possible, entertaining, as we are told there is already too much didactic lecturing, and the men, tired out with drill, are not in condition to listen to dry teaching. Health instruction is to be made attractive by the use of moving pictures, lantern slides, etc., made in military surroundings, a specially designed lecture for a military audience, and an instructive poster exhibit. The posters are simple, bold and impressive, and we think will attract attention and convey the lesson. They appeal to patriotic motives rather than to fear of infection. Soldiers are stimulated to keep themselves fit.

For the enlisted man who is invalided on account of tuberculosis most interesting and somewhat complex plans are being developed. The system will include not only care and medical treatment, but on attempt, wherever possible, to restore the men to an economic independence, and, to this end, to provide certain means of vocational education.

At present the plan is to treat tuberculous soldiers in large military sanatoria. The announcement has been made that camps will be located in New Haven, at Otisville, at Asheville, at Denver, and in New Mexico. Attention has been called to the fact that men will often refuse to go to a military camp and will demand their discharge from the Army. In Canada and England, it has been found very difficult to retain in military service men who were ill with tuberculosis. Of the first contingent sent back to this country from abroad, a large majority of the cases of tuberculosis have already secured their discharge from the Army. To meet this situation the Surgeon-General has recently ruled that no one will be discharged until his recovery is complete or is as complete as possible. A man who is discharged on account of disability comes at once under the rules of the Bureau of War Risk Insurance in order that he may be paid compensation. If not discharged, he remains in the regular service and gets his salary, and does not get compensation. If an agreement with the War Risk Bureau can be reached to the effect that no compensation will be paid by the Bureau to a man who is not discharged by the medical authorities, the Surgeon-General may be able to retain the men under treatment so long as is proper.

The question of reconstruction and re-education is closely associated with the point that we have just discussed. The agencies interested in this phase of the care of tuberculous soldiers are: the Surgeon-General's office, the Federal Board of Vocational Education, the War Risk Bureau and, incidentally, the American Red Cross. Preliminary studies of courses of instruction have been made and the experience in England, Canada and France has been studied. Colonel Frank Billings of Chicago, has been put at the head of the Bureau of Reconstruction and Military Hospitals in the Surgeon-General's office. Under his direction the plans for reconstruction and re-education are being developed. The general outline is to have a large convalescent camp in each one of the sixteen military districts of the country. Apparently, each camp will consist of the hospital, one section of which will be assigned to tuberculosis, another to nervous diseases, another to maimed soldiers, etc. As the center of the group, where the hub about which the whole system should revolve, will be the school of preparatory vocational education or industrial rehabilitation. Twelve of the sixteen hospitals have been designated by the Surgeon-General, certain of the large military hospitals being set aside for this purpose. The stages of education are of interest. In the first stage, bedside occupations are provided; these are designed to occupy the patients' minds and to make them feel that they can make use of whatever strength or ability is left to them. The effect of bedside occupations is, therefore, chiefly psychological. The next stage is occupation therapy or a curative workshop. Here patients will get more direct connection with industrial life. Although emphasis will be laid on the therapeutic value of the work, the instruction should be preparatory to the final step in the return of disabled men to economic life. The third and final stage should be the school for industrial or vocational education, to which patients may be graduated when therapeutic treatment is no longer considered necessary. The final stage will probably be in charge of the Federal Board for Vocational Education.

In the development of this system, the experience of all countries will be helpful. At the beginning probably it will be necessary to borrow teachers. Later on the staff may be recruited from disabled men who have fitted themselves to teach. The Red Cross has already started an Institute for Crippled and Disabled Men and is making preliminary studies as to the field to be covered.

Another aspect of the work of reconstruction is of interest. We must expect that many of the men who have come back disabled and in need of rehabilitation, will refuse re-education. They are allowed compensation sufficient to keep themselves and their families. They feel that they have given all and now deserve freedom from discipline. In other countries the experience has been that only fifteen per cent. of the men who need industrial re-education are actually getting it. An attempt to meet this difficulty has been made by coöperation with the War Risk Insurance Bureau. The principle is proposed that a man, when discharged on account of disability, shall receive such compensation no matter how much additional money he earns through industry. On the other hand, it is proposed that the Bureau of War Risk Insurance insist that disabled men submit themselves to re-education in order to prevent the deterioration in manner of living. The compulsion toward re-education can be brought about by cutting off a part, at least, of the compensation, provided a man refuses to make use of whatever ability is left to him. It is yet doubtful just how this principle can be developed into an acceptable procedure.

As to the plans adopted by the Surgeon-General's office that relate to general public health, and the control of tuberculosis, interesting developments may be noted. There was prompt recognition of the fact that examinations for military service are certain to bring us valuable knowledge concerning the extent of tuberculosis and increased responsibility for the care of cases that are newly discovered. The result of the examinations so far seems to be that our former estimates as to the number of discoverable cases of tuberculosis in the country must be doubled—that is to say, instead of estimating from five to ten living cases of tuberculosis for every death of the disease, we must estimate from fifteen to twenty cases for every death. Additional knowledge on any subject always leads to the development of equipment to meet the new situation. Therefore, although we may at first be disheartened at the thought that facilities are not at hand to take care of the increased number of cases, yet the field has been proven larger than we thought and a new weapon with which to educate the public in the prevention of tuberculosis and the provision of equipment for its proper care has been given us.

When we come to consider what the State of Massachusetts can do to meet its responsibility for tuberculosis discovered in connection with the war, we must realize that the pre-war equipment, however highly organized, is not adequate for the new responsibility. A few fundamental principles should be observed. First, we must look to it that no ground gained before the war shall be given up. What has been done in the past shall be considered only a foundation and the beginning of what must be done in the future. The public must be made to understand that, although the need was great in the past, it is far greater at present. Secondly, equipment in the shape of hospitals, sanatoria, dispensaries, etc., must be developed for the care of Massachusetts men who may be returned to their own sections with tuberculosis. The Army plans to take care of its disabled men. We know that although the plans of the Army are made with great wisdom,—and I personally believe with splendid foresight,—yet those plans are subject to modification. We know that however rigid the ruling relative to the retention in military service of every soldier until he has had full treatment, there are going to be exceptions to this rule. Men who are sick want to be near their homes and to be treated by doctors in whom they have confidence. They and their families are often going to appeal to Congressmen and every other source of pressure to secure this object. Therefore, in my opinion, we must prepare to a certain extent for the care of soldiers near their homes. Moreover, through the military cases we are likely to discover additional cases of tuberculosis by follow-up in the families of the soldiers. Therefore, you will need additional accommodation in your public institutions. In the private or semi-private sanatoria there will also be a need for development. Officers demanding somewhat better quarters than can be provided in the public institutions will come to you for accommodation. The need of an institution such as the new Crane Sanatorium at Rutland seems to be evident.

Finally, the State of Massachusetts must be certain that the closest possible coöperation between local, state and federal authorities shall be secured. In your State, local health groups have no trouble in coöperating with your most efficient State Health Department. I believe the same thing will hold true in coöperation with Federal authorities. Do not forget, moreover, that for emergency aid in public health work developing in connection with military necessities, the American Red Cross stands back of us ready to help. I wish to bear testimony to the splendid spirit of coöperation which one meets from the Federal authorities at Washington when you ask them to consider the problems that come up in connection with the fight against tuberculosis. For instance, we have been anxious as to the care of men who are discharged on account of tuberculosis from military service without military standing, or who are entitled to compensation and must wait for it. Apparently in all cases where there is emergency due to military conditions, the Red Cross is willing to help. Certainly by taking a broad point of view, by shouldering our own responsibilities and also bringing in on a reasonable basis, State and Federal agencies, we can accomplish the best results.

In closing, I wish to make an earnest appeal for hearty support of the measures taken by authorities in the field of public health. There may be certain details about which we may have differing opinions, and it may be our duty to bring the points of difference to the attention of the men who are at the heads of Departments in Washington. But when a ruling is made that touches us in our public health work, we must give it a whole-hearted and fully developed trial. I can bear testimony to the single-mindedness, the broad-mindedness, and the devotion of most of the officials with whom I have been in contact and who have been planning for the health of the nation under war conditions.

Conservation of Man Power in Industry.

By Anna M. Staebler, Boston.

Secretary, Massachusetts Committee on Health in Industry.

The need for conserving man power in industry has been suddenly forced upon the employer because of the drafting of men into the Army and a cutting off of immigration.

Before this country entered the war there was an almost reckless turnover of help, due largely to the fact that the employer knew there were plenty of men waiting at his gate to replace those who left his employ. The up-to-date employer made a study of the cause of turnover and tried to remedy it, because a frequent turnover was a loss. This has led and is leading to much industrial betterment.

The situation today is very different from that preceding the war. Many manufacturers are feeling keenly a shortage of help, while being pushed to the limit with contract government orders. Under such pressure the temptation has been to lower the labor standards, many of which were hard-won from time to time through legislation.

England and France have sounded a warning for us because of the mistakes they made, early in the war, by lowering their standards in the frantic rush to produce munitions and army supplies. Hours of labor were lengthened; Sunday, as a day of rest, was eliminated; women and minors were pressed into industry, and other such mistakes made, till fatigue and broken-down health had made such an inroad upon the necessary numbers of workers that drastic legislation was passed and rigidly enforced.

Notwithstanding this lesson, learned at such cost by the Allies, there are war industries in this country making the same mistakes with their eyes open, and yet blind to results.

In Massachusetts the maintenance of labor laws is carefully watched. We have a special War Emergency Commission which gives hearings once a week to manufacturers of war supplies, who ask for exemption from certain labor laws for a limited period in order to fill their contracts on time. Representatives of organizations interested in good working conditions are present to see that standards are not unnecessarily lowered.

Labor conservation was recently given notable recognition in orders issued by the Chief of the Bureau of Ordnance to arsenal commanders and manufacturers filling war contracts, calling for the maintenance of advanced protective standards for the workers. A similar order was issued by the Quartermaster-General.

To quote from a bulletin issued in January, 1918, by the American Association for Labor Legislation: "These orders rank among the most enlightened official human documents ever issured by any government either in peace or in war. Their influence upon the movement to safeguard the health and safety of working men and women, and to protect children, cannot be overestimated."

Since these orders cover only the manufacture of munitions and the filling of war contracts, there are many remaining loop-holes for breaking down labor standards. Let us consider the chief of these; also the safeguards we may employ to combat them.

Hours of Labor.

Overtime is an industrial abuse, which needs unusually close watching at any time, and especially in war-time. It has been proved repeatedly and conclusively that there is an increase in output during the shorter working day. It was found, while making a time study "that women, working on moderately heavy lathe work, whose output was 100 units when working 75 hours a week, increased their output 34% when the hours were reduced to 60 per week, and 58% when the period was reduced to a 50-hour week. Men engaged on heavy munition work increased their hourly output from 100, on a 60-hour week, to 139 on a 50-hour week basis." (Boston Medical and Surgical Journal, April 4, 1918.)

The longer working day is, therefore, less economical. It commonly causes fatigue. Most employers and all insurance companies covering accidents and occupational diseases know that fatigue is largely responsible for accidents, sickness, diminished efficiency, loss of time and lessened output. Why, then, work a man, woman or child to the point of fatigue?

We look to the State Board of Labor and Industries to enforce the laws governing the length of the working day for men, women and minors, the length of the lunch period, the observance of Saturday afternoons, every Sunday and certain days as holidays. In addition to observing such laws, some manufacturers allow rest periods of ten or fifteen minutes during forenoon and afternoon. This results in a greater output. Women and young persons cannot work profitably for more than 5 hours continuously.

Fatigue is lessened by the 8-hour shift. A 24-hour period of two shifts shows greater fatigue and is less profitable.

Night Work. Attempting to turn night into day, especially for a continuous period of considerable length, should be avoided when at all possible.

Women and children should not be employed on night shifts, chiefly for moral reasons. If war conditions force women to do night work, their welfare should be carefully guarded.

Standards in Workrooms.

Standards to provide good light, adequate ventilation, sufficient heat, pure drinking water (supplied through approved and frequent bubblers), proper washing facilities, control of the spitting menace, approved seats, sanitary toilets, and to prevent danger from fire, accident, occupational diseases or other hazards, should be conscientiously observed.

A safe and sanitary workshop is an obligation due the employee by the employer.

Employment of Women.

The health of women workers should be conserved because many of them will be the mothers of our men, who will be the future strength of the nation. Six million women are employed in industry in Great Britain, two million of whom are working on shells, which is exacting, hard work. England and France learned that their health must be cared for or they would certainly break down. Let us profit by their lesson. Orders from the Ordnance Department and the Quartermaster-General read: "Night work for women should be prohibited. Effort should be made to restrict the work of women to 8 hours, even where the law permits a nine or ten-hour day. Special precautions to be taken regarding rest periods and seats, time and place for meals, Saturday half-holidays and lifting heavy weights. When it is necessary to employ women in work hitherto done by men, care should be taken to make sure that the task is adapted to the strength of women. The standards of wages hitherto prevailing for men in the process, should not be lowered where women render equivalent service.'' No tenement house work.

Factory Day Nurseries.

At least three manufacturing firms in Massachusetts maintain day nurseries where children whose mothers are employd in the factories are cared for during the day. Is the shortage of men so great that mothers must be drawn into industry? That time may come, but has it arrived?

The place for the mother is in the home, caring for her children. Our child life must be conserved and the mother allowed to remain at home in order to help in this conservation.

The warning note against factory day nurseries has been struck loudly by public health workers.

Minors in Industry.

There are over 50,000 minors between the ages of 14 and 16 employed in Massachusetts. There are 8000 employed in Boston, showing an increase of 2000 in ten months, from Jan. 1 to Nov. 1, 1917.

If we sap or exhaust the vitality of our undeveloped boys and girls of today, we shall surely pay for it in physical, mental and moral weaklings a few years hence, unless they are most carefully guarded by protective laws. Regarding the health of these minors, they should be given a thorough medical examination before employment. I have been told that the present examination usually goes no farther than a glance at the child and the signing of a card. A thorough examination would disclose many opportunities for the treatment of incipient conditions and would, furthermore, enable the physician to designate in what industries and on what particular processes a boy or girl who had a slight physical impairment might safely work. The physician might be a medical vocational guide. He has a wonderful opportunity to do preventive and constructive health work.

These children should be encouraged to take up healthful recreation and they should be informed as to the opportunities open along this line. Between the ages of 14 and 16 these boys and girls should be compelled to attend continuation schools during the working day—not in the evenings. Boston established a continuation school in 1914, but it is the only city or town in the State making the attendance at such a school compulsory by law.

Prevention of Accidents and Occupational Diseases.

Insurance companies are making it worth while for employers to safeguard their employees against accident and occupational disease. Many plants have organized safety squads.

Effect of Alcoholism on Industrial Workers.

The drinking man is more susceptible to accidents and occupational diseases than the abstainer. He is affected more readily by fatigue, his capacity for skilled work is impaired, his muscular working capacity reduced, and his memory impaired. Alcoholism is a considerable cause of the shifting of labor, lost time and spoiled work.

Among drinkers there is greater frequency of accidents, a longer recovery period and a heavier death rate. Accidents decreased 54% in a Pennsylvania steel plant in the first six months after the town went dry, as compared with the same time in the preceding wet year. Some firms try to combat alcoholism in their men by offering non-alcoholic drinks, including coffee and milk at less than cost. National prohibition only will be the solution of the problem.

A scientific study made by a sick benefit society found that drinkers 25 to 34 years of age lost 372 days in recovering from wounds for every 100 lost by the average insured man, while their death ratio was 4 to 1.

Industrial Nursing.

Approximately 125 factories and stores in Massachusetts have established nursing service, and employ nurses on full or part time. These nurses do first aid work, inspect the sanitation of the plant and tenements, do social service work, and, in the isolated mill towns, often do bedside nursing in the homes, as a visiting nurse would do. Their work is preventive and constructive. Insurance companies consider that the industrial nurse is a safety factor and so allow a reduction in the rating to firms employing nurses. Undoubtedly she is the most potent factor we have in conserving the health of the employee. Our Committee on Health in Industry has been, for nearly three years, interesting employers in the value of the trained nurse in industry. Last year we helped to establish nursing service in 20 plants. In addition to this important piece of health conservation work, 53 noon health talks were given in factories to approximately 4000 women employees. Three of our largest department stores asked for these talks to be given to their employees. Three thousand leaflets on health subjects were distributed after the talk. Our exhibit on health in industry is sent to any part of the State. Slides are used for illustrated talks on subjects pertaining to health of workers and good working conditions.

We stand ready to help in conserving man power in industry.

The war has revealed, more than the days of peace, the need for good working conditions and the maintenance of the health of industrial workers.

To maintain health means to maintain working efficiency, while reduction of health means loss of efficiency. Sickness decreases the individual's production and increases the risk of accident. An epidemic of sickness, be it nothing more than grippe, can completely disorganize a department or even an entire plant. Every man is needed on his job these days. Everything possible should be done in the way of legislation and the enforcing of the laws to conserve the safety, health and vitality of the industrial army, on which depends the supply of munitions, food and clothing and, more than all, ships to carry them across.

Original Articles.

IDIOPATHIC EPILEPSY A SYMPATHICOPATHY.

By Edward A. Tracy, M.D., Boston.

(Continued from page 814.)

The association of pigment spots with vasoconstriction spots, and the constant presence of both in idiopathic epilepsy, is shown by the following observations, copied from the records of fifty-eight patients.

Case 3. Obs. 1511. Right forearm: dorsal surface shows vasoconstriction spots and one pigment spot. On palmar surface, one vasoconstriction spot; a pigment patch near the wrist.

Case 2. Obs. 1507. On right forearm, palmar surface, two vasoconstriction spots; one pigment spot near ulnar styloid.

Case 4. Obs. 1515. Vasoconstriction spots and pigment spots on dorsal surface of right forearm, and on palmar surface of left forearm.

Case 5. Obs. 1518. Vasoconstriction spots and pigment spots on dorsum of left forearm, and also on plantar surface.

Case 7. Obs. 1524. Vasoconstriction spots on dorsal surface of right forearm, and a vasoconstriction spot and pigment spots on plantar surface.

Case 8. Obs. 1528. Vasoconstriction spots and pigment spots on dorsum of right forearm, and on palmar surface a vasoconstriction spot and a few faint pigment spots.

Case 9. Obs. 1531. Vasoconstriction spots on dorsum of right forearm with pigment spots.

Case 10. Obs. 1535. On dorsum of left forearm are three vasoconstriction spots and numerous pigment spots.

Case 11. Obs. 1539. On right forearm, palmar surface, are vasoconstriction spots and a pigment spot.

Case 12. Obs. 1543. On right forearm—palmar surface— a vasoconstriction patch and one pigment spot. On left forearm—palmar surface—a vasoconstriction spot and a faint pigment spot.

Case 13. Obs. 1546. On right forearm, dorsal surface, one small vasoconstriction spot and a pigment spot.

Case 14. Obs. 1550. Vasoconstriction spots and pigment spots on palmar surface of right forearm; on dorsal surface similar conditions.

Case 15. Obs. 1554. On left forearm, palmar surface, vasoconstriction spots and pigment spots.

Case 16. Obs. 1557. Vasoconstriction patches and several pigment spots on palmar surface of right forearm. On palmar surface of left forearm, vasoconstriction spots and a few faint pigment spots.

Case 17. Obs. 1561. On dorsum of right forearm are four pigment spots and a vasoconstriction patch; on the palmar surface are a few vasoconstriction spots and a few faint pigment spots. A similar condition observed on left forearm.

Case 18. Obs. 1565. Right forearm: dorsal surface shows vasoconstriction spots and innumerable freckles; palmar surface shows vasoconstriction spots and pigment spots; palmar Left forearm: dorsal surface shows vasoconstriction spots and pigment spots; palmar surface, numerous vasoconstriction spots, freckles, and a large pigment spot.

Case 19. Obs. 1569. Vasoconstriction spots and pigment spots on dorsum of right forearm. Vasoconstriction spots and pigment spots on palmar surface of left forearm.

Case 20. Obs. 1573. Right forearm: dorsal surface shows vasoconstriction spots and pigment spots. Left forearm: a few vasoconstriction spots and pigment spots.

Case 21. Obs. 1576. Left forearm shows vasoconstriction spots and numerous faint pigment spots on the dorsal surface.

Case 23. Obs. 1581. Right forearm: dorsal surface, vasoconstriction spots and pigment spots; palmar surface, vasoconstriction patches and pigment spots. Left forearm: dorsal surface, vasoconstriction spots and two pigment spots.

Case 24. Obs. 1584. On dorsum of left forearm, a vasoconstriction spot and six pigment spots; on palmar surface, a few vasoconstriction spots and pigment spots.

Case 25. Obs. 1588. Left forearm: palmar surface, vasoconstriction spots and one faint pigment spot; on dorsal surface, pigment spots. Right forearm: on dorsal surface, scar from a burn.

Case 26. Obs. 1592. Right forearm: on palmar surface, vasoconstriction spots and pigmented skin near the wrist.

Case 27. Obs. 1595. Left forearm: dorsal surface shows vasoconstriction spots and seven pigmented spots; palmar surface shows vasoconstriction spots and two pigment spots. Right forearm (redder): on dorasl surface numerous vasoconstriction spots and pigment spots; on palmar surface, one pigment spot.

Case 28. Obs. 1598. Right forearm: on palmar surface, vasoconstriction spots and a few minute pigment spots. Left forearm: on dorsal surface, vasoconstriction spots and many pigment spots.

Case 29. Obs. 1602. Left forearm: vasoconstriction spot near wrist and pigment spot on hand—dorsal surfaces.

Case 30. Obs. 1606. Left forearm: dorsal surface shows vasoconstriction spots and pigment spots.

Case 31. Obs. 1609. Right forearm: palmar surface shows vasoconstriction and pigment spots. Left forearm: dorsal surface shows vasoconstriction spot and pigment spots.

Case 32. Obs. 1611. Left forearm: dorsal surface shows vasoconstriction spots and pigment spots. Right forearm: numerous white scars, vasoconstriction spots and pigment spots.

Case 33. Obs. 1614. Left forearm: dorsal surface shows vasoconstriction spots and pigment spots; palmar surface shows vasoconstriction spots and pigmented skin near wrist. Right forearm: dorsum is red, mottled, and shows vasoconstriction spots and pigment spots; palmar surface also shows vasoconstriction spots and pigment spots.

Case 34. Obs. 1617. Left forearm: dorsal surface shows vasoconstriction spots and a pigment spot on the wrist. Right forearm, vasoconstriction spots and pigment spots on both surfaces.

Case 35. Obs. 1619. Left forearm: palmar surface shows vasoconstriction spots and pigment spots. Right forearm: dorsal surface shows vasoconstriction spots and pigment spots.

Case 36. Obs. 1622. Left forearm: palmar surface, vasoconstriction spots and pigment spots.

Case 37. Obs. 1625. Left forearm: dorsal and palmar surfaces show vasoconstriction spots and pigment spots.

Case 38. Obs. 1627. Right forearm: dorsal and palmar surfaces show pigment spots. Left forearm: dorsal surface shows pigment spots.

Case 39. Obs. 1630. Right forearm: dorsum shows vasoconstriction spots and pigment spots. Left forearm: dorsum shows vasoconstriction and pigment spots.

Case 40. Obs. 1632. Left forearm: dorsum shows vasoconstriction spots and pigment spots.

Case 41. Obs. 1636. Right forearm: dorsal and palmar surfaces show vasoconstriction spots and pigment spots. Left forearm: dorsum shows vasoconstriction spots and pigment spots.

Case 42. Obs. 1638. Left forearm: palmar surface shows vasoconstriction spots and pigment spots.

Case 43. Obs. 1641. Left forearm: dorsal and palmar surfaces show vasoconstriction spots and pigment spots.

Case 44. Obs. 1643. Left forearm: on dorsum, vasoconstriction spots and a small pigment spot.

Case 45. Obs. 1645. Left forearm: palmar surface shows vasoconstriction spots and pigment spot near the wrist. Right forearm: palmar surface shows pigment and vasoconstriction spots.

Case 46. Obs. 1648. Right forearm: dorsum shows vasoconstriction spots and pigment spots.

Case 47. Obs. 1650. Right forearm: dorsum shows pigment and vasoconstriction spots.

Case 48. Obs. 1652. Righ forearm: dorsal surface shows vasoconstriction spots and pigment spots.

Case 49. Obs. 1655. Left forearm: dorsum shows pigment and vasoconstriction spots.

Case 50. Obs. 1658. Left forearm: dorsum shows vasoconstriction spots and pigment spots.

Case 51. Obs. 1661. Left forearm: palmar surface shows vasoconstriction spots and pigment spots.

Case 52. Obs. 1665. Left forearm: palmar surface shows vasoconstriction spots and pigment spots. Right forearm: dorsum shows similar conditions.

Case 53. Obs. 1668. Left forearm: dorsal and palmar surfaces show vasoconstriction spots and pigment spots.

Case 54. Obs. 1671. Right forearm: dorsum shows pigment and vasoconstriction spots.

Case 55. Obs. 1675. Left forearm: palmar surface shows vasoconstriction spots and pigmented skin near the wrist.

Case 56. Obs. 1677. Right forearm: dorsum freckled and shows vasoconstriction spots; palmar surface shows vasoconstriction spots and three large pigment spots.

Case 57. Obs. 1681. Left forearm: dorsal surface shows two small pigment spots, and near the wrist a few vasoconstriction spots. Right forearm: dorsal surface shows three small pigment spots and three vasoconstriction spots—the latter near the wrist.

Case 58. Obs. 1697. Vasoconstriction spots and pigment spots on dorsal surfaces of both forearms.

Case 59. Obs. 1705. Vasoconstriction spots and pigment spots on palmar surface of right forearm.

Case 60. Obs. 1711. A few pigment spots on dorsum of right forearm and two vasoconstriction spots near them.

Case 61. Obs. 1721. Vasoconstriction spot on dorsum of right forearm, near the wrist, and pigment spots.

Other observations connected with vasoconstriction spots appear in the records. A few of them are here copied because of their interest:

Obs. 67. On left forearm a vasoconstriction spot near the stroked area became more intense (in color) after the stroking.

Obs. 49. Vasoconstriction spot on left forearm, while under observation, became more intense in color and larger.

Obs. 60. On right forearm, vasoconstriction spots were observed becoming whiter.

Obs. 40. Vasoconstriction spot on right forearm was seen to enlarge while under observation.

Obs. 92. On left forearm, vasoconstriction spot was observed to have changes in its intensity while the patient slept after an attack of convulsions.

Obs. 118. Four vasoconstriction spots on right forearm and none on left. Shortly after, one appeared on left forearm.

Obs. 120. On right forearm, vasoconstriction spots were seen, which changed in intensity while being observed.

Obs. 123. Vasoconstriction spot on left forearm was seen to increase in intensity. Three vasoconstriction spots on the right forearm almost disappeared, that is, were seen to lessen in intensity in the course of a few moments.

Obs. 143. Vasoconstriction spot observed on ulnar side of the left hand.

Obs. 158. Vasoconstriction spots on both forearms. One on ulnar side of left hand.

Obs. 152. Vasoconstriction spots on both forearms were observed to become more intense after stroking.

Obs. 220. After stroking right forearm (in testing for reaction time) spots were observed to become more intense—whiter.

Obs. 145. Vasoconstriction spots on left hand became more intense after stroking left forearm.

Obs. 1698. Stroking near by a vasoconstriction spot (in testing for reaction time) was followed by the spot becoming whiter.

These latter observations, confirmed by many repetitions, are important for two reasons: they prove that the vasoconstriction reaction is a true reflex, as reflex action is the only explanation of the intensifying observed of the vasoconstriction spots after nearby stroking; and they demonstrate a lesion of the reflex neurone paths that allows stimuli to be reflected out of the normal paths of the reflex. These observations, moreover, suggested a method that at times is helpful in diagnosing a vasoconstriction spot. If we stroke near by a suspected spot, and the stroke is followed by intensifying of the spot coincident with the reflex vasoconstriction evoked in the stroked area, doubt of its true nature is removed by the vasoconstriction it actively manifests.

(To be continued.)

Society Report.

THIRTY-SECOND ANNUAL MEETING OF THE AMERICAN ORTHOPEDIC ASSOCIATION.

Army Medical School, Washington, D. C., April 22-23, 1918.

(Continued from page 823.)

MECHANO-THERAPY.

Prof. A. E. Bott of Toronto presented this subject. The use of appliances to assist physical re-education was dealt with, as also the question of the removal of mental disability associated with impairment of physical function. The principles had been applied to 300 cases of military returned patients. The majority of these were orthopedic cases. The work had been largely experimental in its early stages, and it had often been found necessary to modify apparatus, but not the principles. There were three important divisions of treatment: (1) special muscle training section, (2) gymnasium, (3) amputation. All treatments were made highly individual and specialized. The success of the gymnasium was found to depend largely on the personality of the medical officer in charge. A hopeful, active personality was essential. Patients were grouped in classes according to specific disabilities, and special exercises were given to the development of the stump before fitting an artificial limb. The weakened muscles of the stump needed special development; and preservation of coördination of the part, which was quickly lost after amputation, was especially sought. The mental attitude of the patient received careful study and training. The men were particularly impressed with the fact that their condition could be greatly improved. After a careful first examination to establish the amount of disability, frequent reëxaminations were made and progress charted. The appliances were used only as means to an end, and the purely temporary character of such assistance was emphasized. The apparatus was made as plain and unvarnished as possible and any complicated mechanism kept out of sight, in order to avoid impressing the patient with the seriousness of his disability.

DISCUSSION.

Dr. C. F. Painter said that the most important thing he could say upon the subject of physicotherapy was in regard to the request which had been put to the members of the Association, relating to their attitude in the selection of the women who were to help the Government by their work as masseuses, in the physical re-education of the wounded and disabled soldiers. All orthopedic men who had to do with massage would realize that there was much difference in the workers in this branch. A renewed emphasis should be placed upon the importance of selecting the right kind of workers to carry out this particular method of therapy. The most careful selection was necessary to aid the work of military service in this respect. Not only were technically competent people necessary, but people of intelligence and education. The American surgeon was accustomed to pay very little attention to this work, and abroad it had been done very much better than in this country. In some of the countries now at war, part of their success had been due to the fact that they had been able to refit many of their men to return to the line, and this had been greatly facilitated by proper attention to massage. In order to keep the standard of this work high, orthopedic men should be careful in the persons they recommended for this class of work and in insisting that the necessary qualifications be possessed by these individuals.

Dr. S. I. Franz said that he was very pleased to have the opportunity to hear these papers. He looked upon this work largely from a research point of view, and he knew little actually of mechanotherapy. In the experience gathered from neurological cases he found that the facts gathered by physiologists had been largely lost sight of. Cases of organic hemiplegias left to themselves had been considered hopeless, but physiologists had found that animals did not remain paralyzed if the hemiplegia was due to destruction in the motor center of the brain. This had led to work upon old hemiplegia, with successful results. Dr. Bott had made many very interesting statements in his paper, and one point brought out was the difference in results obtained in individual and collective treatment. Which was the better method? How far ought one to sacrifice the individual to the many? To deal with each patient separately, one would have to have a teacher to each patient, and this was manifestly impossible. The importance of the competitive spirit when training collectively must not be lost sight of. In the use of mechanical therapeutics there was the question as to how fatigue could be measured. Dr. Franz said he had been accustomed to use manipulation plus apparatus, because he could better control the method, not in the manner deprecated by Dr. Bott, but because he knew then the amount of work the muscles were doing. The combination of manipulation and apparatus gave better results than the use of either alone. In most work carried out special attention had been paid to the aspect of movement; that was especially true in poliomyelitis cases. One could not, however, divorce muscle response from nerve impulse. In movement, three factors were apparent,—force, extent, time. In poliomyelitis work, attention had been centered entirely on *force*. For perfect contraction there must be exerted a certain force to a certain extent in a certain time. More attention should be paid to these points. The next point was the attitude of the patient. This had attracted an enormous amount of attention because of what the Freudian School called "over-response."

It was highly important from the psychic side that the patient should feel *satisfied*. Certain patients would do things agreeable to them and these things might prove to be just as good exercise as the one the physician would pick out for them to do. They would get results because their attitude was not antagonistic. Dr. Franz said he had obtained results, even though he had had to work with a bad class of patients,—insane hemiplegiacs, when he had obtained a satisfied attitude on the part of the patient. This willingness could often be obtained by saying exactly what one was trying to do, and by pointing to results obtained in other patients. As an example of this Dr. Franz said that he had one patient, an ignorant old Irish woman, paralyzed in the right arm and leg, who came to his laboratory. It was intensely hot weather, and he allowed her a fan if she would use it with the right hand. She learned to fan herself with the right hand in two days, and in a few weeks she learned to sew accurately. Her interest had been gained, and was an important part of the cure.

Dr. F. B. Granger said that in the question of physico- and electrotherapy, members of the profession were given a chance to stand or fall on their own merits. The most intelligent use was to be made of such measures if they were to have good results. The utmost coöperation in all branches of therapy must be given to military work, and if used intelligently as adjuncts these methods would give surprising results. The effects might be enumerated as: (1) chemical, (2) diathermal, (3) mechanical, (4) psychical. In regard to the first, chemical effects were obtained by the galvanic current in the use of ionic medication. Drugs could be introduced locally without strain on the digestive system. Using this method, the duration of local anesthesia by cocaine persisted better than by hypodermic injection. In regard to diathermy, the procedure was raised to the *n*th power and the tissues heated through and through, as under these conditions the skin offered no resistance and remained hot. By such means a piece of meat could be cooked from the center out. Tissues of growths could be controlled by this method. In regard to the physiological effects of electricity, these had been pretty well mapped out in their application to pathology. Deep-seated tissue could be given passive exercise; atonic muscles could be restored to normal, and intestinal atony could be treated by the sinusoidal current. In the study of the reaction of degeneration, it was found that there was an active contractile element;

there was also another element which would respond only to prolonged stimulation.

Lieut.-Col. R. Wilson said in closing that they must all feel it a duty to concentrate their efforts upon reconstruction. In this matter it was necessary to make a compromise between individual and collective methods. The greatest amount of energy must be expended upon class work because of the large numbers who would have to be trained. It would be absolutely impossible to have an individual teacher for each patient. The best one could do would be to classify small numbers and give more attention to those who had to have individual treatment. It was a question of organization. The treatment should be homologous, and the same methods of teaching should be used from one end of the country to the other. This was done in Canada and would have to be done in the United States. Again, the simplicity of apparatus was important. One should not be misled by manufacturers who had ingenious devices for extracting money. In regard to appliances, an institution in Belgium had been observed, where all kinds of complicated apparatus were on view, with patients demonstrating its use. Only one patient was observed to take any interest in the tools and he was going through all the motions with great energy. The visitor pointed him out and remarked that he seemed to be getting a lot of good from the apparatus and asked what was the matter with him. They were told that he had no disability at all, but that he was the inventor of the machine and was trying to demonstrate it in order to sell it. The Bristow faradic coil with two windings was useful for promoting painless contractions. It was highly important that there should be a research laboratory in connection with the central school, where a large number of questions could be worked out. The questions of growth of bone and of nerve tissue could be investigated in such a laboratory. The orthopedic men, the physiologists and the physicotherapists could work and consult together on such questions. Among many new questions that came up, one was likely to forget what had already been done. The matter of electric anesthesia was one of these. The possibility of this method was well worth while considering. All workers should get together to consider the best methods.

BEDSIDE OCCUPATIONAL THERAPY AS PROPOSED FOR THE MILITARY HOSPITALS.

Major Henry R. Hayes gave this paper (by invitation). This was, he said, by no means a new procedure. The experience of civil life was being applied to military hospitals. In the Walter Reed Hospital, Washington, D. C., the principles of occupational therapy were being tried out. Hitherto, the army had been solely concerned with the return of the soldier to active duty, but there were many who would be fit only for restricted duty, and some for civil life. Ward occupations were instituted for those patients still in bed and in chairs, and was to be considered as prevocational, intended to stimulate the patient to return to regular work later. One essential of the treatment was that the work should be continuous. It was of the greatest consequence that the work should not flag or lapse owing to lack of material. Such occupations as weaving, rug and mat making, wood-carving, basketry, and beadwork could be well handled by patients. The work should be simple, easily finished and have commercial value. This would afford the patients training in concentration and coördination.

THE BRISTOW FARADIC COIL IN ORTHOPEDIC PHYSICAL THERAPY.

Dr. Albert H. Freiberg presented this paper. It was stated that the author did not believe that electricity had any specific curative effects upon the results of injury and disease of the muscles and nerves, yet it would seem likely to prove valuable as a means of accurately localizing functional stimulation. To do this by means of gymnastics or massage alone was admittedly unsatisfactory. The Faradic current, as hitherto employed, is impracticable, because if used with sufficient strength to produce efficient muscle contraction, it is very painful. By means of the Bristow coil muscle contraction might be produced without pain, even in the large muscles, such as the quadriceps of the thigh. A brief description of the coil and its construction were given, also its uses and the precautions to be observed in technic.

DISCUSSION.

Major M. T. Foley said he had been working for three months and had at last succeeded in getting orthopedic wards to take up the work. An old building was in use and the first curative workshop was established. The essential of the work was that it was to be entirely curative. Various grades of work were prescribed for patients with contracted fingers, with wrist-drop, or other disabilities. Typewriting was used in some cases, in others work with the fret saw. Convalescence was much hastened by the treatment and the medical results had been noticeable. Objections to the work had been made on the part of regular army surgeons who had not been able to see how the men were improved by it. Another point which they disliked was the untidiness in the wards, which was contrary to the ideas of regular military cleanliness.

FOOT PROBLEMS AND TREATMENT WITH UNSEASONED TROOPS.

Captain Clarence B. Francisco, M.R.C., A.E.F., presented this paper. One of the first difficulties he said was to secure shoes large enough to meet new demands. The ordinary man in civil life walked little and the muscular development of the foot was prevented. A No. 9 foot usually tried to wear a No. 7 shoe. The strain of marching, with the addition of the heavy pack on the back, necessitated wearing of a shoe two sizes larger than in civil life. Trench foot had now come to be considered a preventable disease. The Thomas heel and the French marching strap had proved very useful in prevention of foot strain. The ordinary commercial arch support should be legislated out of the market. Men with marked deformities of the foot, such as hallux valgus, hammer toe, rigidity and flat foot, should not be sent abroad. Such cases were sure to break down under the unusual strain and to take up space in hospital needed for more sick patients. Examinations recently had been conducted rather with the view of preventing possible slackers from escaping, than with that of the fitness of candidates. Therefore, many men with useless feet, from the military standpoint, had been entered.

FOOT PROPHYLAXIS IN THE SOLDIER.

This paper was read by Major J. T. Rugh, M.R.C. The subject dealt with the recognition of the potentially weak foot and its restoration to full strength and efficiency. This might sound in theory an easy matter, but its practical application was very difficult in the service. The problem might be divided into four headings: (1) feet, (2) shoes, (3) officers, (4) soldiers. Emphasis was laid upon the necessity of instruction to the officers in order that they might be able to detect in time the potentially weak feet. In the examination of 50,000 soldiers, 27½% were found to have functionally weak feet. The short heel and weak tendon was found a most potent cause of disability. In regard to the shoes, need of proper care in drying the shoe when wet was pointed out. The sock should be worn inside out, or with the smooth side next the foot, on a long march. Oiling the shoe would prevent its becoming stiff and hard. The Munson type of shoe would be found to fit 98% of the men satisfactorily and would save 8 out of 10% of foot inefficients. In regard to feet, all types were found among the men, and the young soldier up to 25 years of age was very adaptable. After that the foot became less elastic. Factors of weakness were: short heel tendons, hypertrophied scaphoid, supernumerary tarsus, congenital valgus, bad shoes, improper posture, muscle weakness, overwork. In regard to the soldier, there was always a certain factor of moral obliquity to be dealt with. There was a vast amount of difference in the mental attitude of the drafted man and the man who voluntarily enlisted. Influence of a man with foot disability was apt to spread unfavorably, and it was found necessary to treat the malingerers by detailing them to hard and unpleasant duties. The chief prophylactic measures employed were: (1) detection of weak cases, (2) proper alteration of shoes, (3) instruction as to walking, (4) exercises, (5) protection from strain. These measures were combined in the general scheme of restoring, where possible, the individual to fitness for service. It was felt that if a man was fit to work for himself and family he was fit in some way to serve the Government in the present crisis.

THE ORTHOPEDIC SERVICE AT FORT RILEY.

Major J. P. Lord, M.R.C., gave this paper. When the examining boards began their work it was a matter of surprise that there were so many potential cripples. Of 5000 men measured, 76% were found with foot inefficiency in some form. A number of malingerers were always to be found, and there was a certain psychology behind this (often very persistent sham) that needed special measures to deal with it. In regard to foot disabilities, there was an extraordinary number of cases of the following: over- and under-riding toes, exostosis of os calcis, of internal cuneiform, and of first and fifth metatarsals. Other disabilities noted were: abnormalities in hip joint, knee joint, disturbances due to excessive drill, arthritides and mouth infections, primary minor ailments, plus the psychoses, metastatic joint infections. In the advisory work, the orthopedic surgeon was secondary in function to the psychologist.

FOOT DISABILITIES IN THE MILITARY SERVICE.

This paper was given by MAJOR HAROLD D. CORBUSIER, M.R.C. This was a preliminary report on the reconstruction of recruits. The march constituted one of the chief duties of a man on campaign. A successful march placed the men at their destination in the best condition. Unless the soldier could reach his place in the firing line, he was useless as a rifleman. It was often seen in military manoeuvers that many stragglers limped into camp late at night, as they were not able to keep up with the march. Napoleon had said that the general who produced the best military shoe would do most to produce an efficient army. This was most true in the present crisis. The American foot seemed particularly prone to disability. The men must be trained to make the best possible use of the legs and feet. Battles were won and lost by legs as well as by rifles. Military service put the most unusual strain on feet accustomed only to the demands of civil life. Flat foot was a common cause of disability. Of 12,000 soldiers, 960 had flat feet to some degree. Among the drafted men it was supposed that there would be exaggerated symptoms, but it was found that there were 9.25% flat feet among the volunteers and 7.25% among the drafted men. However, there were always to be found cases of genuine malingerers. The psychology of the men was a matter for careful observation. It was unwise to inform the malingerer that he was suspected. The best treatment was by hard and unpopular duty. These men often asked to be sent back to regular line duty of themselves, the treatment having proved too vigorous for comfort.

(To be continued.)

Book Review.

Infant Feeding. By CLIFFORD G. GRULEE, A.M., M.D., assistant professor of pediatrics at Rush Medical College (in affiliation with the University of Chicago); Attending Pediatrician to Presbyterian Hospital, and to the Home for Destitute Crippled Children, Chicago. Third edition, thoroughly revised. Octavo of 326 pages, illustrated. Philadelphia and London: W. B. Saunders Company. 1917.

In this, the third edition, the author has incorporated the advances in the knowledge of infant feeding and of the infants' metabolism which have been made in the last few years. The chapter on absorption and metabolism has been considerably enlarged and the others revised where it was necessary. The general plan of the work is the same, however, and its merits and defects the same as in the past. It gives a very fair idea of the teaching of the German School of Pediatrics.

War Nursing. A Textbook for Auxiliary Nurses. By MINNIE GOODNOW, R.N., a War Nurse in France. Philadelphia: W. B. Saunders Company. 1918.

This textbook is written by a nurse, who has served in France in the present war, for women who realize the need of America and wish to serve their country in the capacity of nurses, even though they have not had hospital training. The book deals with the care of the wounded from the time of their entrance into the hospital to their dismissal, and gives adequate information with regard to the nurse's duty to her patients. It is admittedly a textbook of nursing as applied to the present war, and is not meant for the graduate, but for the auxiliary—the Nurse's Aid—who has had little or no previous training, but who wishes to learn the fundamental things which will be of use to her in war service. It might well be used in teaching Red Cross or other training classes.

The work contains only material applicable to military nursing, is adapted to war conditions and war hospitals. It covers the ground thoroughly, from the etiquette and discipline to be followed in the hospital ward, to the actual assistance which may be rendered in the care of wounds, bed-making, bathing, diet, medicines, bandaging. No attempt is made to disguise the difficulties and hardships attendant upon war nursing. It is written by a woman who has herself seen much service in the present war, and who knows conditions in their actuality.

A Bibliography of the War Cripple. Compiled by Douglas C. McMurtrie. New York City: The Red Cross Institute for Crippled and Disabled Men. 1918.

The extent of public interest in the rehabilitation of crippled soldiers is evidenced by this first publication of the Red Cross Institute for Crippled and Disabled Men, entitled "A Bibliography of the War Cripple," compiled by Douglas C. McMurtrie. There are listed no less than 1022 separate books, reports, and articles dealing with the reconstruction and re-education of maimed men. Practically all the material has appeared since August, 1914.

The list includes entries referring only to physical cripples, and not to blindness, deafness, and mental derangement incurred by soldiers. The material referred to is largely in French and German. Of the entries in English, more have been published in America than in England, in spite of the comparatively recent entrance of the United States into the war.

This bibliography is the first of a series of scientific publications to be issued by the Red Cross Institute for Crippled and Disabled Men. It may be obtained without charge by addressing the office of the Institute at 311 Fourth Avenue, New York City. The list, which is practically complete, will be found invaluable by any one seriously interested in the American program for reconstructing disabled soldiers.

Elements of Pediatrics for Medical Students. By Rowland Godfrey Freeman, A.B., M.D., Adjunct Professor of Pediatrics, New York University and Bellevue Hospital Medical School; Attending Pediatrist to The Roosevelt Hospital, New York, etc.; ex-President of The American Pediatric Society. New York: The Macmillan Company. 1917.

The author states in his preface that the aim of this little book is to impart in a simple and concise form information regarding the characteristics of children and the problem of keeping infants and children wèll by proper régime and feeding, and, in addition, to summarize the important facts to be obtained by physical examination, by examination of the urine and feces, and by roentgen-ray examination, and to review briefly the essentials of diagnosis and treatment. It seems to us that he has attempted the impossible in endeavoring to give a satisfactory presentation of so large a subject in so small a space. For this reason the book is necessarily incomplete and superficial and contains many half-truths and minor misstatements. It is hardly suitable for mothers, and is not complete or accurate enough to serve as the basis for the training of students. We wish that the author would rewrite it in about four times as many pages.

The Conduction of the Nervous Impulse. By Keith Lucas, Sc.D., F.R.S. Monographs on Physiology. Longmans, Green and Company. 1917.

No number of the series of Monographs on Physiology will be more welcome than this, and certainly none has or will have more permanent classic value. In the death of Keith Lucas a little over a year ago, physiology lost its ablest worker in the problems of fundamental neurology. It is indeed fortunate that just prior to the outbreak of the war Lucas had delivered seven lectures at University College in London. These summed up his work and that of his pupils upon the processes of excitation and conduction in muscle and nerve, and were to have been amplified to meet the needs of monographic publication. From the outbreak of the war until his death in October, 1916, in an aeroplane accident, Lucas himself was too deeply in government work to think of the physiology of the nerve impulse, but the nucleus of the volume was at hand and is now given to us through his pupil, Adrian.

It will come as a pleasant shock for those who fear the matter which such a volume must contain to find how beautifully easy abstract physiology becomes in the hands of Lucas, who was a master not only of experimentation, but also of expression. While fundamental facts in science are usually and properly the simplest things in the world, few of their discoverers have the power of making them so for others. Readers of this book will have no doubt of the author's success in both lines.

The monograph presents a fairly complete picture not only of experimental results but of the methods used in obtaining them. Thus there is excellent discussion and description of the measurement of the nerve impulse by interpolation of a region of decrement between the point of stimulation and the recording muscle. The application of this method in Adrian's classical demonstration of the "all or none" character of the impulse, is given early in the book, together with a critique of other work upon impulse evaluation. The significance of regions of decrement in normal conduction between nerve and muscle, and in reflex arc conduction, follows very naturally, as does discussion of summation in similar positions.

It is refreshing to watch the enmeshing of the philosophical vagaries of Verworn, and the modern German school of neurology, in the net of close analytical experimentation which Lucas has so untiringly woven about them. Both clinical and experimental neurologists will benefit by the elimination of speculation from the fundamental conceptions of their work, and it is a great pleasure to recommend the monograph to both classes of observers of the physiology of the nervous system.

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BLOOD PRESSURE FINDINGS IN DISEASE.

THE real value of the accurate estimation of the blood pressure by means of the many types of blood pressure apparatus is overlooked if confined to the mere estimation of the number of millimeters of mercury that the systolic or diastolic pressure registers in every case that happens to come up for medical examination. In fact, high or low blood pressure dissociated from tangible disease has very little significance except in a few instances of excessively high pressure, when the condition is apparent even without this instrument of precision. Yet it is by no means our intention to minimize the value even of these abstract findings, but rather to emphasize the importance of continually determining the state of the blood pressure during operations and during the course of disease. Blood pressure readings will influence the prognosis as well as the treatment. It is now fairly well established that the taking of the blood pressure before determining upon any but the most urgent surgical operations will give valuable information concerning the amount of cardiac efficiency, and in this way anticipate sudden cardiac failure during the anesthesia. A fall of blood pressure after mild exertion is an indication of a deficient cardiac reserve, for in ample cardiac reserve mild exertion causes a rise in blood pressure. The taking of the blood pressure during the course of the anesthesia will often give warning of impending heart failure long before the signs of actual failure require drastic measures in an attempt to save the patient's life. In suspected internal hemorrhage, the marked lowering of the blood pressure usually corroborates the suspicion. Excessively high blood pressure in impending eclampsia demonstrates the need for immediate depletive measures.

During the course of the infectious diseases constant blood pressure readings will, perhaps, give better clues to impending complications than the pulse or the thermometric readings. In pneumonia, it is usually found that when the systolic blood pressure reading, expressed in millimeters of mercury, does not fall below the pulse rate, the prognosis is good; when it does, the most active stimulation is necessary to save life. Distinct fall of the blood pressure during the course of diphtheria is an indication of grave cardiac failure and probably a fatal outcome. In scarlet fever the sudden rise of the blood pressure indicates renal disturbance, even before the urinary findings make their appearance. In typhoid fever the range of the blood pressure is usually somewhat lower than obtains otherwise, but a marked and sudden drop indicates hemorrhage, even though the bleeding is not otherwise apparent. Perforation and peritonitis, on the other hand, are usually accompanied by a rise in pressure. Low pressure is characteristic of the course of tuberculosis, but is, in all probability, an indication only of the generally low vitality.

Unless the blood pressure instrument is constantly used in disease much valuable aid to diagnosis, prognosis and treatment will be lost. While the mercury instruments are much the best to use, they are not so easily portable as the spring instruments. In the field the latter instruments are being used for this reason.

* * *

TUBERCULOSIS AND PREGNANCY.

The denial of the privileges of marriage and maternity to advanced cases of pulmonary or other forms of tuberculosis can, of course, allow of no exceptions. When, however, this question arises in respect to cases that are undoubtedly arrested for a considerable period, a just decision is very difficult to make. In this connection it must be remembered that healed tubercular lesions are so often discovered in persons in whom they were not otherwise suspected that spontaneous recoveries without affecting the future life activities of such individuals must be very large. Moreover, modern prophylactic measures and rational methods of treatment reclaim so many of the undoubted active cases that the tubercular cases which must be denied these privileges become comparatively few. Walsh (*American Journal of Obstetrics*, February, 1918) points significantly to the fact that the number of cases of pregnancy that come through without additional hurt to the mother, when the tubercular condition has been arrested for a considerable period, is rather large. For this type of tubercular prospective mother, a strict regimen, enforced during the whole period of pregnancy, gives hope of good results. The question often arises whether to allow pregnancy in active tubercular cases to go to term. The violence of the operation for abortion, with its immediate and remote mortality possibilities, is not less unfavorable than allowing patients to go to term without interference. The shock, the loss of blood, and the intoxication of the anesthesia are, perhaps, a more severe burden than the prolonged wear on the mother from the pregnancy. The vitality of the child of an active case of tuberculosis does not, of course, enter into this question. An abortion undertaken with this point in view would be tantamount to an act of euthanasia—and we are hardly ready for that. Besides, tuberculosis is not hereditary. The most that can be transmitted is a susceptibility to the tubercular infection, against which, perhaps, the offspring of such a parent must be especially guarded. This would be a factor whether the father or the mother were tubercular, but to a somewhat lesser degree in the former case. The question of infection with tuberculosis in the offspring of tubercular parents depends upon the amount of actual contact that the child has with its tubercular parents. The sooner it is removed from such contact the less the chances of infection.

The formula has often been advanced that an arrested tubercular mother may have one child with safety, a second child only with danger, but a third one, never. While pregnancy is a physiological process, it is a physiological activity that can be undertaken only by those whose activities are not engaged in overcoming disease processes.

* * *

MALIGNANT DEGENERATIONS.

In spite of the tireless work carried on in this connection, the basic causes of malignant disease are as obscure as ever. Yet it is recognized that certain conditions have a tendency to originate malignant disease, and that certain benign growths are prone to malignant degeneration. But these observations are merely clinical, and have no relation of cause and effect. Although any campaign for the prevention of malignant disease is directed against the malignant degeneration of benign growths or irritative conditions, it is erroneous to speak of a precancerous stage, at least in so far as our present knowledge of this disease goes. Nevertheless, it seems clinically that those benign tumors that are composed of elements of all three of the original germinal layers are more prone to malignant degeneration than those tumors composed of single tissue elements. Likewise, when the benign growth is composed of young and undifferentiated cell elements and is present in tissues in which such cell elements are usually alien, the likelihood of malignant degeneration is large. The presence of young cell elements in tissues where older cell elements would be expected often determines the decision on the probable nature of the tumor where that is in doubt, and decides the question of appropriate radical measures in anticipation of future and positive degeneration. The removal of all benign tumors is, of course, impracticable and, in all likelihood, entirely unnecessary, and the removal of sections for laboratory diagnosis is not condoned by every one, on the ground that, if malignant, the cell elements composing the growth will be disseminated through this procedure.

On the other hand, tumors that are on the surface of the body are continually under observation and more easily controlled than those within the body. The campaign against malignant degeneration can have little effect against these, for usually when symptoms of a growth appear the malignant nature is already well established. In any event, it is generally recognized that chronic irritations of any tissue or of benign growths are the most potent causes of malignant degeneration. The malignant degeneration of gastric ulcers, certain uterine conditions, lingual ulcers, etc., is universally accepted as a very strong probability. Perhaps the strongest elements in the campaign to prevent malignancy is the prevention and healing of chronic irritative conditions and the early recognition of actual malignant disease—perhaps even more than the fear of spontaneous degeneration of benign growths.

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ANTISEPTICS IN SURGERY.

Care against the introduction of foreign materials, especially of pathogenic organisms, into the field of operation or into wounds of any nature is still the crux of surgical asepsis upon which is founded so much of the modern progress in surgery. On the other hand, the removal of foreign material or pathogenic organisms once they have made their way into the fields of operation or into wounds, often presents a difficult problem. Yet the use of strong antiseptics for this purpose is now universally condemned. The notion that strong antiseptics will render a wound aseptic by destruction of the pathogenic organisms contained therein is too crude for discussion. The antiseptics that have the power of destroying bacteria in the tissues have the power, likewise, of destroying tissue, and it is the devitalized tissue that furnishes the medium for the growth of pathogenic organisms. The resistance of bacteria is, as a rule, not less than that of the tissues to antiseptics. While healthy, undevitalized tissue must be depended upon for the maximum bactericidal power, devitalized tissue, no matter how brought about, is the most potent factor in infection and delayed healing. The bactericidal power of the tissues is the best antiseptic and must never be interfered with. Besides, it must not be expected that bad surgical technic will be glossed over by antiseptic treatment. Nor is it a fact that antiseptics are better wound cleansers than non-antiseptic solutions. The rapid removal of devitalized tissue will remove the only barrier against the benign action of the bactericidal power of the normal tissues. Kindness in the treatment of the individual tissues by restraining from rough handling or the application of irritant or caustic antiseptics is as efficacious in overcoming intractable wound conditions as is kindness to the individual in overcoming vicious personal inclinations. Abusive scrubbing of the skin or wound with the use of strong antiseptics for sterilization purposes must be relegated to bygone surgery. There is as much technical skill, if not more judgment, required in the treatment of wounds, than in the technic of major surgical operations. The strides in surgery in the present war have been along the lines of reclamation of tissues and members rather than along the lines of heroic surgery, requiring usually the loss of a maximum amount of tissue, and this has been accomplished by conservatism in every phase of surgical procedure rather than otherwise.

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MEDICAL NOTES.

Health Standards and Care for the Immigrant.—In response to the nation-wide demand for better and more thorough ways of Americanizing the immigrants in the United States, the Carnegie Corporation has undertaken a national study of the methods of Americanization now in use. The work is to be done by ten divisions, which are to conclude the study in a year.

The Division on Health Standards and Care will be under the direction of Michael M. Davis, Jr., Director of the Boston Dispensary. The aim of this particular division is to learn what the health agencies of the United States are doing to teach the immigrant our American standards of health. A special effort will be made to study methods which have been successful in some localities, and to develop from these recommendations for communities having similar problems. The Division earnestly desires the coöperation of individual physicians, and of hospitals, dispensaries, health departments, nursing and medical associations, industries, and all the national organizations working to promote the public health. Information is sought concerning health conditions and problems among the foreign-born of different races and localities, and concerning methods of health care and education which various organizations have found effective among them. It is hoped that by means of this national survey, material can be secured whch may prove helpful to all the many individuals and groups which are striving to make the immigrant a better American citizen. It is intended to make a special inquiry into alleged serious evils due to quack practice among immigrants.

Mr. Michael Davis will retain his connection with the Boston Dispensary, but will give a considerable share of his time for one year to the national study. The position of Assistant Director has been established by the Boston Dispensary and Mr. Joseph J. Weber has been appointed. Mr. Weber has been connected for some years with the hospital and public health work of the State Charities Aid Association of New York, and for the past twelve months has been executive secretary of the Mayor's Hospital War Service Committee in New York City. He brings to Boston a wide experience in public health service.

Illinois Plan for Tuberculous Soldiers.—The plan adopted by Illinois for providing care for returned tuberculous soldiers is an interesting illustration of a practical working agreement between a State Department of Health, a State Tuberculosis Association, and the American Red Cross. According to the agreement, the Central Division of the American Red Cross, through the Home Service Sections of its local chapters, will provide care for returned tuberculous soldiers in the interim between their return to their home communities and the time that more permanent provision is made for them, and shall provide one-third of the expense for the more permanent care. Immediately upon the return of a tuberculous soldier, the Home Service Section of the American Red Cross will ascertain the essential facts concerning him—his location, physical and financial conditions, his educational standards, and home conditions. An expert examination and diagnosis will be made in the case of each soldier by the Illinois Tuberculosis Association, and reports will be submitted to the State Department of Public Health so far as they may affect the control and prevention of communicable diseases. Under no circumstances will the American Red Cross countenance the housing of a returned tuberculous soldier in a county almshouse, except when absolutely unavoidable. The American Red Cross will pay one-third of the expense of care, and the Illinois Tuberculosis Association will exert all possible influence upon local individuals and public and private organizations to provide for the remaining two-thirds of the cost of permanent care. The Illinois Tuberculosis Association will require of institutions, physicians, or other agencies to whom the care of tuberculous soldiers is entrusted, complete reports of progress.

Malaria in Rumania.—An article in the *Lancet* of March 9, 1918, makes the following interesting statement concerning malaria in Rumania:

"Ever since the time of Ovid, who laments the fevers so prevalent at Tomi (in the Dobrudsha), Rumania has been known to suffer severely from malaria, which overspreads the whole country with its great plains, reedy marshes, and slow rivers liable to widespread inundations. The region most heavily attacked is that between the Sereth and the Pruth, but no part of the country escapes. Sailors used to get higher pay for sailing through the Dobrudsha, so great was the risk of fever, which occurred up in the mountains as well as along the water-courses. Babes reported in 1904 that in 7000 post-mortem examinations he had rarely missed seeing evidence of malarial infection. Cases were as frequent in Rumania as they used to be in Italy, but the less deadly tertian fever was more common. The carrier anopheles are found everywhere. In 1899 it was attempted to dry up the marshes by planting there willows and poplars, but as the uncomprehending peasants delightedly burned the trees for fuel this experiment failed. In 1902 orders were given to embank the rivers to prevent floods and reduce malarial infection, but the good was too little clear, too speculative, and nothing material was achieved until in 1907 malaria prevention was linked to what people call a practical purpose, and the reclamation of areas liable to floods was undertaken in order to increase the arable acreage, a benefit riparian owners and occupiers could well understand. In 1904 Babes, with his colleagues Cantacuzenu, Sion, and Irimescu were appointed a committee to select some method of quinine prophylaxis, and they chose Koch's system, which directs that 15 gr. of quinine shall be given every ten days. Their report was adopted and results were not long delayed: of 6000 persons protected, only 1% fell sick; of 16,000 left untreated, 18% contracted marsh fever. Although only 2% of the population was reached by this prophylaxis, a great alteration in the situation had been achieved, and malarial fever cases were becoming rapidly fewer when, in 1913, the Bulgarian War distracted all the energies of the country and it began to fall back into its old state of a hundred years ago. Dr. F. Pielsticker declares, however, that the German Army when invading Rumania was able to secure itself against malaria by the prophylactic measures found useful in Macedonia."

WAR NOTES.

Tuberculosis in the United States Army.—Col. George E. Bushnell of Washington, D.C., director of tuberculosis work in the United States Army, announced at the 14th annual meeting of the National Tuberculosis Association, that only .783 of 1% of the men in the army reëxamined since June 6, 1917, are victims of tuberculosis. The Government has made ample provision for the care of such cases and the reclamation of the patients for active work in the industries of the nation.

Dr. Carrel's New Hospital in France.—Dr. Alexis Carrel, whose hospital at the front was recently destroyed by the Germans, is building a new hospital at Noissiel, where he will continue his experiments and treat the gravest cases of wounded. He is organizing, also, laboratories at St. Cloud, where he will study treatment of hemorrhages.

One Hundred and Eighty-Four Sick and Wounded Soldiers Landed.—One hundred and eighty-four sick and wounded soldiers were landed in the United States during the week ending May 31. They were sent to army hospitals. The previous week sixteen arrived.

Dr. Hunt to Head Unit.—Dr. Barbara Hunt of Bangor, who is to do civilian work in the devastated regions of France, as a member of the American women's hospitals, has been placed in charge of the first unit, which will sail soon. This organization is under the administration of the war service committee of the Medical Women's National Association and has the sanction and coöperation of the Red Cross. The work will be mainly among women, old men and children.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending June 8, 1918, the number of deaths reported was 216, against 224 last year, with a rate of 14.36, against 15.12 last year. There were 39 deaths under one year of age, against 31 last year.

The number of cases of principal reportable diseases were: diphtheria, 45; scarlet fever, 10; measles, 280; whooping cough, 60; typhoid fever, 1; tuberculsois, 72.

Included in the above were the following cases of non-residents: diphtheria, 5; measles, 3; whooping cough, 1; typhoid fever, 1; tuberculosis, 11.

Total deaths from these diseases were: diphtheria, 2; measles, 1; whooping cough, 3; tuberculosis, 27.

Included in the above were the following non-residents: diphtheria, 1; tuberculosis, 1.

Appointment of Dr. Coon.—Dr. William Coon, of Haverhill, has been appointed director of health and sanitation for the United States Shipping Board. He will have his headquarters at Philadelphia, and will have charge of health and sanitation in all the shipbuilding yards in the country.

Training School of Psychiatric Social Work.—The Training School of Psychiatric Social Work, conducted by Smith College, Northampton, and the Psychopathic Hospital, Boston, is under the auspices of the National Committee for Mental Hygiene, and is designed as a war emergency course. Its purpose is to prepare social workers to assist in the rehabilitation, individual and social, of soldiers suffering from nervous and mental diseases, including war-neuroses and the so-called "shell-shock." Aside from the war contingency, these workers would also be of permanent value in civilian neuropsychiatric work as assistants to hospitals, courts, schools, out-patient departments, and social agencies.

The value of this special division of social work has been demonstrated in the care of neuroses of civil life in a number of out-patient departments. The demand for such workers should be met by immediate preparation.

The length of the course is eight months. The academic instruction will be given at Smith College from July 8 to August 31. The practice work will be given at various centers where there are opportunities for social work with psychiatric cases under direction of trained social workers. The major studies in the course will be sociology, including methods of social case work, psychology, and social psychiatry. Minor studies will include hygiene, occupational therapy, military usage, and the writing of records and reports.

Industrial Health Conference.—At a conference recently held in New Bedford, under the auspices of the State Board of Labor and Industries and the Massachusetts Medical Society, the principal subject discussed was industrial health, from the standpoints of both the employee and the employer.

State Association of Nurses.—The 15th annual meeting of the Massachusetts State Nurses' Association was held on June 11, at 525 Boylston Street. Sessions were held by the Massachusetts League of Nursing Education and the Private Duty Nurses' League. All nurses in war service were asked to send notice of address and assignment to the corresponding secretary, Miss E. P. Davis, 21 Walnut Avenue, Norwood, Massachusetts. As a war measure, the annual Red Cross dinner was omitted this year.

New England Deaconess Association.—The New England Deaconess Association has submitted its annual report for the year 1917. In May, the General Deaconess Board held an annual convention. In September, one of the most profitable meetings of the year, the "Round Table Convocation," was held. This year, for the first time, deaconessess, other than superintendents, have served on the Board of Managers; this has increased the efficiency of the Board. In response to war needs, fifty hospital beds were offered to the Government for the care of needy soldiers and sailors: a portable ward has been erected on the hospital grounds for this purpose. Plans have been made for fresh air work at the Haverhill Home. The report includes mention of the activities of the Training School for Christian Service, the Home in Boston, the hospitals in Boston and Concord, and the Home for Aged Methodist Women.

Certain Dietary Essentials.—The Massachusetts Public Health Bulletin for April, 1918, contains an interesting article entitled, "Certain Dietary Essentials." It describes the ideal diet as one which supplies, in the most palatable and easily digested form, all of the body requirements. Besides the generally recognized constituents,—plenty of water, protein, energy-forming foods, mineral substances, and a sufficient amount of coarse food,—there are two other substances, called fat-soluble A and water-soluble B, which an adequate diet must contain. A lack of these two substances results in beriberi and serious eye disease, causes failure of normal growth and development, and makes the individual less resistant to disease. Water-soluble B is contained in nearly all of our common foodstuffs. In order, however, to include fat-soluble A, milk fats, egg yolk, leaf vegetables, or animal organs, must be present in the diet. Of these, whole milk is the most economical and valuable, for it is easily obtainable and contains not only fat-soluble A, but also water-soluble B, protein, mineral substance, and sugar.

NEW ENGLAND NOTES.

Maine Physicians Elect New Officers.—The house of delegates of the Maine Medical Association have elected the following officers:

President, Dr. C. M. Coombs of Waldoboro; vice-presidents, Dr. John Sturgis, Auburn; Dr. Charles W. Bell, Strong; secretary and treasurer, Dr. B. L. Bryant, Bangor; council of delegates, Dr. John F. Thompson, Portland; Dr. E. V. Call, Lewiston; Dr. Byron F. Barker, Bath; Dr. Oliver W. Turner, Augusta; Dr. W. N. Minor, Calais, and Dr. Charles H. Burgess, Bangor.

Health Survey of Middletown, Conn.—A recent health survey of Middletown describes the sanitary conditions of the city, and offers numerous suggestions for improvements. The water supply ought to be made safer by chlorination, supplemented by weekly bacteriological examinations. Sewage wastes ought to be better disposed of; all refuse should be effectively screened from flies and mosquitoes. Concerning organization, it is suggested that a board of health be created with full powers to make regulations to safeguard public health. One man, at least, should be fully trained for the work and should give his whole time to it; all details of administration and appointment of subordinate officers should be in the hands of this health officer. It is recommended that the medical inspection of school children be transferred from the Board of Education to the Department of Health. In the control of communicable diseases, it is advised that prompt reporting of such diseases as diphtheria, typhoid fever, and tuberculosis be insisted upon. Fumigation after the termination of such a disease, because it is costly and not effective, should be abandoned. Isolation of patients and proper placarding should be continued. It is recommended that a public health nurse be appointed to visit cases of communicable disease and teach the proper methods of isolation of the sick.

Further recommendations are: steps should be taken by the Health Department for the systematic detection and control of "carriers;" the supervision of the sanitary conditions of meat and other food products sold in Middletown should be extended and systematized; the town should provide a small slaughter house; there should be more frequent inspections of the farms and more frequent bacteriological analyses of milk; a rigid system of licensing milk dealers and grading milk should be instituted; efforts should be made to secure the efficient pasteurization of milk. The report describes infant welfare work, and recommends that the Health Department initiate a movement for the improvement of obstetric service by systematic supervision and education. Organized campaigns should be instituted for the control of tuberculosis and venereal diseases. The report contains statistics concerning the finances, population, death rate, and diseases of Middletown.

Obituary.

CHARLES HERBERT WILLIAMS, M.D.

Charles Herbert Williams, M.D., died at Cambridge, June 9, 1918, of heart disease, aged 68 years.

Dr. Williams was born in Boston, April 19, 1850, the eldest son of Dr. Henry W. Williams, the first professor of ophthalmology in the Harvard Medical School. He was graduated from Harvard, A.B., in 1871, and M.D. in 1874, then spending several years in Europe, studying ophthalmology and settling in practice in Boston with his father. He did some pioneer work in color blindness. He married Caroline Fisher, daughter of George J. Fisher of Brookline, in 1884, and the following year accepted a position with the Chicago, Burlington and Quincy Railway as director of its medical and health insurance interests. Returning to Boston in 1895, he resumed the practice of ophthalmology with his brother, Dr. E. R. Williams, residing in Milton. He was possessed of great mechanical ability and was most successful in the diagnosis and treatment of errors of refraction. Among the medical societies in which he held membership were the American Ophthalmological Society, Chicago Ophthalmological Society, American Medical Association, Massachusetts Medical Society.

Dr. Williams is survived by his widow and two children.

Correspondence.

A PROTEST AND A DEFENSE.

Fall River, Mass., June 7, 1918.

Mr. Editor:

In looking over the issue of the Journal this week I am pained and surprised to find, under the title of "Correspondence," a letter from the pen of George W. Holmes of Boston, casting aspersion upon the ability and name of Dr. M. N. Tennis, a member of The Massachusetts Medical Society and a roentgenologist of high ability.

I thought the day had passed when petty jealousies and low methods could be brought into the Journal for discussion. I am a member of the staff of the Union Hospital, Fall River, Mass., and Dr. Tennis was for a number of years roentgenologist at that institution. It seemed to me that the time had passed when a clique or cliques could dictate as to who would practice medicine or roentgenology in a city.

It was always my opinion that Democracy meant freedom of thought and work, but this letter reveals that we have in Boston a certain unwritten provision that "You shall not pass" unless *we* say so.

Please give this letter the same prominence that you accorded Dr. Holmes', because I believe, and a great many men who have consulted with Dr. Tennis also believe, that this is an attack upon his character and ability. In other words, the letter would give the impression that he was not honest and had no ability, but of course this is far from the truth, and it is to be regretted that an attack of this nature should be allowed to creep into the Journal.

Yours very truly,
E. A. McCarthy, *M.D., President,*
Fall River Medical Society.

The Boston Medical and Surgical Journal

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GET LEAN, AND—HOMELY.[*]

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YOU can judge better than I whether to be homely is worse than death or not. There is a difference of opinion about that,—although largely, perhaps, among the "weaker" sex. The world-wide food-shortage makes our topic a most timely one for discussion at the present time, especially since there is no doubt at all that many children and adults who have heretofore been getting along fairly well nourished are at the present time distinctly and needlessly underfed.

We shall have a little something to say about the relation of overleanness, first, to health and long life; second, to happiness and long life; third, as to the causes of thinness; fourth, as to its relation to personal beauty; and fifth, about its remedy or mastery. Here are five more or less separate and yet personally related topics.

Now at length is solved that long-standing mystery as to *why*

> "Jack Spratt could eat no fat,
> His wife could eat no lean,—"

plainly because he was a "fatty" to the livable limit, while she was either a very lean person indeed, or else a "consistent vegetarian,"—if there be such a thing as a really consistent vegetarian extant.

There is a curious general prejudice against over-thinness, and that, too, quite aside from any relation to personal beauty. Most persons still think that to be lean is to be ill or illness-bound; but this certainly is one of the many unfounded traditions from an age of relative ignorance about physiology. In those unscientific days symptoms were often mistaken for causes. The cause, for example, of consumption was not then known, and the wasting of Bright's disease, of cancer, of diabetes, of "marasmus" in general was not at all understood. The old name for consumption, some of you are aware, was phthisis—from a Greek word meaning "wasting." We realize now that this wasting, this form of progressive leanness, is a result, not a cause. Nowadays, then, it is true that people should give up their old traditional prejudices against over-thinness, as if it were necessarily a symptom of present or of approaching illness. We can better discriminate, today, and we realize that leanness in itself, so far at least as life is concerned, is not an evil (with two important common exceptions which will be noted forthwith).

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[*] A free public health lecture at the Forsyth Dental Infirmary for Children, Boston, on Sunday afternoon, December 9, 1917.

Public opinion is always anywhere from 800 years (in the case of the evaluation of the body, the sanctions of the flesh) to 25 years behind the best human knowledge. Thus, for example, the mass of our people still think that to be fat is to be healthy, and that to get thin is to go rolling down hill towards one's inevitable final lodgment beneath the sod—the quiet and restful but damp and chilly grave, or else toward cremation, which is neither damp nor chilly, and, by the way, far too infrequent. Most business men, housewives, salesmen, actors, and so on without limit, still gloat over a degree of fatness really disgraceful. If they meet a friend and notice that he is a little fatter than he was the last time they saw him, they pat him on the back and say, "How well you are looking!" "You must be well because you are getting fat," is implied, but surely "Get Fat and—Die" is scientifically more true than this habitual opinion still so nearly universal among the mass of "just folks." More properly, it is always the "golden mean" that we want: "Nothing too much."

Two exceptions, as far as life and death are concerned, rather serve but to emphasize our ponderal rule: the first exception being that over-leanness during the period of growth, when due especially to insufficient food, is a very great disadvantage; and the second exception that over-leanness when overtaken at any age with a dangerous and exhausting illness, notably lobar pneumonia, diabetes, diphtheria, and typhoid, is a disadvantage. It is a decided disadvantage to be very thin during the period of growth, and sometimes a mortal disadvantage to be very thin at the beginning of a very long and exhausting sickness, yet not perhaps so much as you might expect on general principles, for there are certain compensations under ordinary conditions of nursing, etc. [One is not able to pass through a second youth (although many certainly do pass through a second childhood); but all of us are liable to contract pneumonia from the cougher and sneezer or even the breather next to us (sometimes only six or eight inches away from our own faces) in our scandalously, wickedly overcrowded street cars,—a menace, summer and winter, to all who use them; the chief means, undoubtedly, by which the sadly fatal pneumonia-scourge is spread. This is something that has not been emphasized any too much in the press, yet it is pretty certain now that most pneumonia cases come from atmospheric contact with other people. It is time for people to wake up and realize the danger, and start to stop it.]

A very lean person has a somewhat less chance of surviving an exhausting and dangerous but self-limited disease—diseases that tend by nature to limit themselves so that the period of danger may be only a short one, and nourishment the critical problem.

Thin people suffer greatly from the cold, and some who, for example, have found themselves weighing eight or ten pounds less than last year at this time were perhaps rather surprised to find themselves feeling so very cold this afternoon when they came out from home: these miss their old fat-jackets!

The *causes* of leanness, scrawniness, thinness, spareness, lankness, gauntness, emaciation, underfedness, skinniness (in polite society, too polite, called "graceful slenderness," and by medical men "hypoliposis") are several in number; we may mention seven of them:

1st. Innutrition—too little food.
2nd. Over-exercise of the masses of muscles.
3rd. General nervousness.
4th. Worrying too much.
5th. The spare-diet habit.
6th. Over-secretion of the pituitary gland.
7th. (which is in reality perhaps No. 6), Heredity.

It is plain that adequate training of the individual as she grows up would prevent the development and the action of the most common of these causes—of all, in fact, save the last two in the list. Here comes in the intelligence and the care of the parents, especially of the mother. The habits of the child must be directed so that by both her own intelligence and by her developing habit-system, her diet shall become habitually adequate to the ideal state of nourishment. This "training" can begin scarcely too early in the child's life. The earlier it be undertaken the more deeply will the little girl's subconscious mind be impressed, and therefore the more easy and the more effective will be its guidance, often without thought or care or much of effort, over her nutrition as determined by the balance of intake and of outgo of body-material. These remarks are in form directed chiefly to adults; but it must not be ignored that nearly every principle suggested is applicable also to the training of the child toward the *prophylaxis* of over-leanness. It is part of the intensive home education based on the modern knowledge of the motivity of the mind and the prevalence of the powers of the subconscious aspects of the personality.

A word about each of the causes of over-leanness in turn.

1. *Innutrition of children.* This is very important, not only for the children as children, but for their adult life. *The American Open Air School Journal* tells that of 548,000 school children studied in fifteen cities in the United States, nearly 30,000 were under-nourished, and lean enough as readily to be picked out of a crowd as underfed. This is 5% and was the condition before the war. What shall we say now? The wretchedness of mind and the misery of body of this condition is indescribable. These children are cold and weak and sad. One of the most cruel features of this hell-war is the fact that there are millions of such children in Belgium, France, Halifax (today), Germany, and England, and even in our own land, scarcely yet under the strain. Another world-wide curse on the black "soul" of German imperialism which a lifetime can never forget—no, not for a day. Considering the multitude of persons concerned, it is as bad as the chopping-off of the hands of the little boys and girls in Belgium, the absolute limit, one thinks, of barbaric atrocity, and worse yet when done (as it has been done so much in Belgium) by civilized men, and not by tigers.

Children suffer more than adults from innutrition, for three obvious reasons—

1. Their greater "metabolism," (total chemical interchange), the chemical process, much more active in children than in adults. 2. Their less resistance because (3) of their less power of storage of fat, muscle, etc., for which reason they suffer from cold much more than adults do.

If the thoughtless, even when very indigent, realized how much adequate food during childhood, especially from 10 to 18, has to do with growth and with adult vigor, the child would get enough to eat at any cost as a matter of family and political economy as well as of human mercy. Consumption, for example, attacks few who have enough food and fresh air, and so it is, too, with general tuberculosis.

2. Our second cause of over-leanness, is *the over-exercise of muscular masses.* The ideal of nutrition is a perfect balance, as I have emphasized elsewhere at considerable length, a perfect balance of intake and of outgo. Overwork then of the body means overwork relative to the effective intake of energy and of body-matter, that is in the food. Continuous overwork when food is adequate scarcely exists. Fatigue and the sleep-time physiologically compelled combine to prevent it, fortunately. A man could not wear himself out by chronic muscular overwork if his muscles were well fed, for he would have to sleep too much to allow of any such harm. We know of the cases of soldiers during the Civil War, who on long forced marches would march sound asleep. The fatigue was so great and the soldiers so well trained that they could march hour after hour in this way. Fishes, too, moving in the water must sleep.

But relative overwork means the consumption of every bit of the body-fat, and every tissue (muscle, gland, connective tissue) reduced to its lowest workable size, as thin and lean and spare as it will live and work.

"Work" from the sedentary, dainty, over-cultured point of view, when all or nearly all real and substantial womanhood and manhood are gone, as the blood has become gradually "bluer" in the generations of Yankeedom,—this kind of "work" won't make one thin. If I may quote a paragraph from a previous paper ("Get Fat, and—Die")*:

> One thing is certain. For the far larger number of persons overweight who do not find it expedient to change their actual daily occupations from a low plane of energy expense (via muscular exercise) to a higher, it is quite futile to expect weight-reduction by bodily work alone, whether in a fine gymnasium, on the farm, or elsewhere. The commoner experience of middle-aged women and men who seek thus to normalize themselves hygienically and cosmetically, of course, is to *gain weight* rather than lose after the first week or so. They actually improve their general condition, as well as their food appetite, so much by the daily

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* Dearborn, G. V. N.: "Get Fat and—Die," Interstate Medical Journal, St. Louis, Vol. xxiv, No. 2, February, 1917, pp. 156-160.

hour or two of unwonted highly enjoyable general exercise that their metabolism is raised so that they "put on" fat. They take just enough exercise to normalize nutrition, but not nearly enough to burn up any tissue fat. But forty-eight hours a week of labor for each of the four weeks of several months would do it! And it is thus, and *only thus for the most part, that the million retain the semblance of the properly human form,* for their diet, for the most part, otherwise would be excessive.

But many take or get too much muscular exercise, whether it is as work or as play, take more exercise than their intake of food warrants; and therefore they eat up their own body-fat.

3. Our third cause was *general nervousness,* personal inflammation. They have given the name Americanitis (American plus the common ending for inflammation) to this national habit. Perhaps it has never occurred to you how extremely grave the implication of such an expression is. Surely it is a most appropriate and telling word, for that is just what the condition is: inflammation of the entire American, of his whole personality. The individuality is inflamed, excited, hurried, forever fussing over nothing, and hurrying on only toward death.

Perhaps I might repeat part of a recent exacerbation ("Hectic Hurry and the Undergraduate" was its title) from the *Journal of Education,* of July 5, 1917:

> My key-note, too, was leisure. And I emphasized its obvious and ever-increasing lack as a step in just the wrong educational direction in these early years of the twentieth century; as the road to the yesterday of all mental (and physical) hygiene; as education in the very thing which it is most essential should be ignored. "Hurry!"—but whither? "Hustle!"—but wherefore? "Strive unceasingly!"—but the Personality that is each of them, within each poor sleepy (or else stimulated, 'hectic') boy or girl, has small interest and takes no proper part in this college "strife," but crouches, as if neglected and abused. This clearly should not be.
>
> And it is indeed a sad thing to see what hurrying restlessness dominates the life in some of the very finest of our colleges today; the breathlessness of it all; the fearsome figure to which the physiologic pressure-gage points; and, above all, the deeper and invidious meaning that this time-lack must have for the life-long training of these women and these men. When in all the long years, or in the short few years, of their life, will these people have time to *educate themselves* if not in the college years, when it is the allotted task?
>
> Perhaps the present writer feels the inherent contrast and the present lack more strongly than some would feel it because he lived the four years while first a student, among the varied natural beauties at the meeting-line of fair Vermont and fairer New Hampshire, on the shore of the Connecticut River,—where else than at Hanover! Old Dartmouth has always more to offer than 'efficiency' or if no more, then at least a real efficiency that includes a self-reliance, a self-respect, an appreciation of Whence? and Whither? and sometimes of Why?, in short, a soul. And Mount Pineo and the beautiful River and Ascutney and Norwich and all up and down the long road (even from Canada to the Sound!) made part of the curriculum which gave each (if he only cared for it!) a chance to learn himself.
>
> And what Dartmouth did then every college else can do, each in its good own way, if it only makes the good start to try. Columbia, even, in the midst of the Earth's largest town, has human selves to train and could find a way, through the planning of some ingenious son or daughter, to see to it that in no case would a serious student think himself ever a machine or his world only a vortex of easily definable energies, of dollars, or of whatever else the efficiency-world uses to count its successes with.
>
> But to view the education or the part of it which leisure can give as an affair only of philosophical esthetics, as a matter wholly of "soul" and personality in the sense discussed so delightfully by many poets and by men who were poets under some other name, were wholly to underestimate the practical versatility of human motives and of human wills. F. H. Bradley's resistless logic has made pragmatists of many, and brought closer together in the thought of numerous men and women the practical values, measurable sometimes even in gold, and those other values, more lasting perhaps, which leisure, and there through thought, alone can give. Bodily strength and bodily endurance, good health, happiness, personality, 'soul,' form a sort of series, an ascending series, if you prefer it so, which mill-managers and shop-treasurers have learned or will learn to measure accurately some day by units and in terms which every citizen will fully understand. The colleges should have foreseen this and effectively felt it all the time, handing it down as almost their highest wisdom to every freshman who rises into the sophomore class.
>
> One must 'commune with herself' or become mechanized; one must escape that insistent 'Hurry! Hustle! Strive'! or lose that one special attribute which marks off the human, not

from brute alone, but from the brass and iron and wood machine which man, rather than God, has made. The whole tearful world cries out for honor and for justice and almost harshly for humanity above all. Will the college, too, deny these to the boys and girls who are trusting her to help make them, not organic machines, alone, but real women and men?

In some institutions of learning the reaction already has actively begun—in theory at any rate.''

But Oh, the curse and the shame of it in an intelligent, well educated people! Too hurried to live! Too hurried and worried to be well nourished. Such inflamed egos, whether seeking gold or chasing enjoyment, take themselves far too seriously, and forever are missing the beauty and grandeur of the noble ocean of life because lost among the bases of its individual, often petty, waves. These folk need the ''broad view,'' the view that is to be had from the exalted mountain-tops of common sense. Take your ''pocket Emersons'' out of your muffs and your pockets, ye people of undue haste, and read yourselves once more into a rational peace of mind and sensible mode of existence! For this fever of the hurried and abnormal living makes you thin and lean, and is the index of the rational undoing of your lives. The conspirator ''Cassius'' was of this type of life, for Shakespeare knew:

> "Let me have men about me that are fat;
> Sleek headed men and such as sleep o'nights.
> Yond Cassius has a lean and hungry look;
> He thinks too much; such men are dangerous."

But the great William did not mean *too* fat! ''Sleek-headed,'' please observe, not fat-headed; and for ''thinks'' we now in these psychologic days would say ''plots'' or ''worries.'' Such men and women indeed are ''dangerous,'' but dangerous especially to themselves:—to their beauty; to their happiness; to the length of their lives; and to the very rationality of their living.

Physiologically speaking and psychologically, this leanness comes mostly, I take it, from an unrealized excess of muscular exertion, mild in degree, but *continuous,* mostly, both night and day, and therefore of great effect on the body's nutrition. It is the continuous things in our life that count. It is not the occasional use of a lot of water but the small continuous leaks that waste the water; the bad drunkard is not the man who goes off on an hilarious ''toot'' once in two months, but the man who is drinking a little every day. It is the continuing processes which most count. Muscle, which you will please remember is one-half of the mass of the body, may work actively without shortening appreciably so as to produce an obvious movement. We psychologists call this state of the muscles increased ''tonus,'' muscular tone, activity short of contraction. It is perhaps activity as great as that of a plain contraction, but different. All the tissues have this increased tone in our distemper of ''Americanitis,'' but in the muscles it is of chief importance, so far as leanness is concerned, for it is the muscles that use up the food most actively.

A chronically nervous person, too, may walk miles and miles about a town, about an estate, about a house, even about a hall-bedroom, and never at all realize how very much muscular energy she has expended during the day. Stairs especially make a rapid fat-wastage. Sometimes a nervous woman will ''wonder why she is so tired'' at night, when she has walked miles and miles, perhaps, although only about a small house. Her body keeps count, however, and every fat-cell in it perhaps is burned up even before it is born; and so never exists as fat at all.

4. The fourth cause of over-leanness, of this walking skeletonry, so to speak, is *worrying too long.* This relationship of worry to malnutrition is now a trite story, and probably known to all of you. Worry is chronic, hectic *fear;* and fear with terrible certainty and speed exhausts the immediate nourishment (the chromatin in the Nissl bodies) of the nerve cells of the brain, the spinal cord, and of the autonomic system.

This depresses the whole body and the fat is the first tissue to go out. The sanatorium and the crematory are the probable end-stations, if not perpetual maidenhood. Worry like *nothing else* spoils the glory of our common but always unique adventure, which we still call our ''life.'' And worry is quite incompatible with body-fat, with plumpness. You have all seen men and women reduced in a few weeks almost to ''walking skeletons'' by trouble, trouble purely mental and purely fearful. No self-fancied trouble or pretended worry will do it: it must be real worry, real fear. Many a man, and more women, fancy they are worrying, when in reality they are happy, gloating like the ''Sheriff of Nottingham'' over imaginary de-lights, which they think of as troubles and hard realities.

Sleep-loss is probably an important factor in this malnutrition, and in the indigestion and inabsorption factors of worry's general bodily depression. Nervous people should drink little tea, coffee, or cocoa, and eat little chocolate, at least after the noon-time meal. (I do not know whether any one has ever called your attention to the fact that the chocolate in confectionery is just as stimulating and will keep you awake just as badly as chocolate (cocoa) dissolved in water and drunk with milk.) These things keep folks awake and prevent the excessive repair which their worry-habit necessitates. Here's a vicious circle.

5. The fifth cause of leanness among our seven, I have termed *the spare-diet habit.* I mean by that a long habit of eating too little of direct fat-producers, a habit of year after year, perhaps dating from childhood. Bad, usually ignorant, training in childhood is usually the reason for this particular one-sidedness. The average, well-balanced adolescent corrects it for himself. Most frequent is the habit of refusing fats of every kind,—animal and vegetable,—usually the former especially. Like the case of boys and of men and tobacco, one experience of nausea is usually remembered and exaggerated all one's life, on the basis of "never again!" It is possible that in some of these persons the fat-digesting ferments are defective or even deficient.

Some people never eat potatoes, and their similars, the starchy tubers. Some never eat bread even, and habitually refuse all the cereals. A few use far too little sugar in its various forms, although we average one-quarter pound daily, each man, woman, and child in the United States, and this is none too much, if properly eaten.

A very few people in good health have acquired a real habit of eating too little of an all around diet,—of not eating enough. These, save perhaps in war-time, are relatively few; but now conscience, the "New England conscience," has considerably increased their number. Some people are actually eating less than they really need in order to save food, hoping it "will win the war."

6. The sixth cause is over-excretion of the posterior lobe of the ductless gland called the pituitary or "hypophysis cerebri." This small gland is found in all vertebrate animals and, therefore, is undoubtedly practically indispensable. However important, it is the size of your finger-end, and is at the base of the brain. It is in intimate, active relation with the thyroid, the pancreas, the ovary, and the adrenal in intricate ways not yet unknotted.

In 1909 Pittman and Fodera produced emaciation in dogs (without the usual digestive disturbance) by the repeated injection into their circulation of the extract of this ductless gland. A year or so later three Boston hospital surgeons, Harvey Cushing, Crowe, and Homans, did the same thing with the posterior lobe, and noted that first there was a bodily loss of the muscle-food (glycogen) and then a progressive muscular emaciation.

Over-excretion, then, of the posterior lobe of the ductless gland is probably one cause of leanness and emaciation in some of those persons whose food-work balance is perfectly normal. How frequent is this gland-defect we do not know, any more than we know its cause. There is associated very likely a derangement of the thyroid or of the ovary, or both. The relations of married life and of its lack to over-leanness may not be here discussed, but the scientists concerned with such matters understand the matter well, and realize its sociologic importance.

The "living skeleton" in the side show is not usually as happy as he looks to the gaping boys about him. He is practically dying, a victim usually of progressive muscular atrophy, most painful, and inevitably fatal. The relation of this wretched but uncommon disaster of disease to the pituitary gland or to its functional balance (for everything is balanced in the organism) is not as yet known, but to be a walking skeleton is not a worthy or happy ideal for any child.

7. The seventh and last cause of hypoliposis, or over-leanness, is said oftentimes to be *heredity:* one is lean because one's parents or forebears were so. This, as far as we can see, means the same as the case mentioned immediately before it. The endocrinous (ductless) gland defect is that which is hereditary, perhaps as a peculiarity of size only; these individuals may have unusually large pituitary glands, just as a line of generations in a family may have unusually large noses or feet or ears.

So much for the chief *causes* of overleanness, and for a few matters of related *hygiene.*

The original title of this talk was "Get Lean—and Ugly," but a member of my family very kindly suggested that the word "ugly" meant two different things, and asked which did I mean? I promptly said, "Both!" The word "ugly," by derivation, and in England, means of course, as you know, such as one may be afraid of or fearful for, but here in America we have grown to use ugly in a figurative sense, to mean ill-disposed, ill-natured, aggressively inclined. It is an ugly word; in use, probably, in too many American households when the wind is East and the millionaire grocer grown more insistent than really he need to be about his little bill. Is it worse now since the sugar and the fuel have failed?

The homely person, especially if a woman, may be "ugly," the ugly person may become homely sooner or later to all who know her, and a very lean, homely person, as we have seen, tends to be ill-natured *because of the lack of fat in her blood* to keep her nerves well-nourished and her temper consequently sweet.

Thin people are far more sensitive (Behan) to pain and marked unpleasantness than are well-nourished folk. To suffer does not ordinarily improve one's optimism and light-heartedness. Thus there's another vicious circle, here.

Inasmuch as homeliness often injures one's disposition, the difference in the two senses of "ugly" seems not so essential. Sometimes even gentleness loses ground with one's beauty and with the sharpening of the nose. I have always had a strictly private opinion that Mrs. Rip Van Winkle was beginning to lose her beauty (whether only "skin-deep" or deeper) as well as her temper, when Mr. Van Winkle began his memorable adventure,—and he may not have been asleep every minute, after all.

A few years ago I published in the *Psychological Review* a notion that the little organs of absorption (the villi) of the intestines had motor activities closely associated with the 10,000 million nerve-cells' need of fat, suggesting thereby a relation between ill humor and leanness now almost within the reach of scientific explanation. Leanness is certainly associated with bodily homeliness (at least in the female). Therefore the two sorts of uglinesss may have more than a mental relationship to each other; they certainly have, in fact, whatever the explanation. I say "female beauty," because recently a hundred or so of my young women students have strongly corroborated my own old opinion, that mere man has properly no beauty of body whatever. If a man is beautiful in the sense of scientific esthetics, he is effeminate *pro tanto.*

These young women, my students, know if any one knows, and they say that evidences of mental and physical vigor and strength are the factors in the male which correspond to the esthetic bodily beauty of the female. I am certain that this is true, and in all ways as sound in its psychology as it is in its femininity. One might almost say, if taken in a moderate sense, that *a woman ought to be gracefully plump, but never fat; a man lean, but never scrawny.*

Unless a woman is vanity-free (and, fortunately, a truly womanly woman never is so), unless she be vanity-free or else a stoic philosopher, she is apt not to appreciate what advantages there are in being thin (especially in the winter of the North), because these advantages are over-compensated by its obvious cosmetic disadvantages to her. But to the man the benefits of being lean are, obviously enough, at least four: 1. He has thereby an increased freedom of action, bodily and mental. 2. He has increased freedom of eating, and sad to say, sometimes of drinking. 3. He has increased freedom for exercise, athletics and games. 4. He has greater handsomeness—the nearest approach to true beauty that women will sanction in a manly man.

These four all are woman's too, of course, but they are commonly as nothing at all in the feminine world's secret mind, comparatively speaking.

In both girl and boy and in woman and man a certain degree of form is "standard"; and without fat, the standard is not kept up.

At any rate, personal human beauty is one of the finest and greatest things in the world, one of the best, one of the highest, one of the noblest, in "the very image of God." Let no one scorn it! One of the greatest mistakes that the zealous Puritans ever made was their absolute ignoring of the religious expression in a woman's or a child's beautiful body. The human being at its best is surely, without cavil, the most beautiful object the human mind has known; the most lovely object earth's wondrous evolution has produced. Ah, here the human educational system has much to develop; much, however, first to *learn*. So afraid are we of letting any one see this most beautiful of human objects, so much false modesty is there, it is almost like Wordsworth's "Hidden Splendor":

> "Full many a gem of purest ray serene
> The dark, unfathomed caves of ocean bear,"

or like Theodore Harding Rand's (the late splendid poet and scholar of Canada) famed sonnet, "A Deep-Sea Shell":

> "Arrived from out abysmal deeps of brine,
> A regal splendor glows within thy whorl,
> Like pomp of rosy morn in shimmering pearl.
> Surely 'the hand that made thee is divine'!
> Ah, why so richly dight for beauty's shrine?
> No eye can feast on walls of gemmèd burl,
> Far down the overwhelming rush and swirl
> Of awful wastes scarce plumbed of fathom-line!
> Fit for the palace of high seneschal!
> Inlaid with colors which the Tyrian King
> Vain sought to rival on his royal scroll,
> And echoing yet the ocean's trembling string:
> Methinks the Master wrought this ivory hall
> To *please the love of beauty in His soul.*"

In other words, beauty of a certainty is *"its own excuse for being"*; and the human body as well as the "ivory hall" and the "walls of gemmèd burl" of Rand, is the work of our Creator "to please the love of beauty in His soul."

G. N. Parker states it keenly well in his charming "Pomander Walk": "Behind her followed her daughter, Marjolaine, a charming girl of nineteen. There is no necessity for more particular description. A charming girl of nineteen is the loveliest thing on earth, and more need not be said." This is the most perfect "description" (suggestion) of a heroine that I have ever read, barring none of the great poets—Browning, or any of the others. Here it is and all of it in a nutshell! Each one is unique, and to describe her adequately (either with brush or pen) is to abandon all mere details and to stimulate the imagination of the beholder or reader. The heroine of a novel is very rarely done justice by her portrait in the book.

Our general prudery in this respect of female beauty we must set down to the present early stage of the earth's human history in which we live, our glimmer of life in the dark of our human time. (The world just now sags backward "on the road to yesterday," dragged back, crushed back; but it will turn again!)

Beauty is more than a joy; it is more than a privilege: it is a duty, but for once a duty that is pleasurable. To get lean and homely, then, is something approaching a fault, just as to be ill is usually the result of either ignorance or of carelessness, or both at once, and gradually coming to be thought of as a disgrace. It actually will seem to be a disgrace when we have learned a little more, and made it public and common knowledge.

To prevent one's self (especially if a feminine self) from becoming too lean is a duty, then, only less than the avoidance of obesity, of undue fat. We must strive in all things for Aristotle's "golden mean,"—"nothing too much."

But the glory of it all is that *the strife is the life*. Our great adventure, horrible sometimes, but always splendid and so forevermore; and in leaving it, perhaps beyond compare; who knows?

In the dietetic stress of war-time, part of our striving adventure should be to retain or to increase our manly and womanly beauty. The world today needs it for its greater satisfaction and encouragement, and the next generation, likewise, for its own sake. But the anti-lean strife is one of ease, and happiness, and the flesh-pots of the lazy, well-fed, warm and idle summer time,—just as the strife against obesity is one of toil and denial, the spare diet, the long, steep mountain-side of continuous climbing.

Cheer up, then, all ye amateur "side-show material," for the race is to the slow and the battle for once to the glutton and the indolent. Be conscientiously happy for once in the broad straight road. Here at home in the bleak New England December, we are traveling

> "East of Suez, where the best is like the worst,
> Where there ain't no ten commandments, and a man can raise a thirst,"

for your only denial shall be of denial; your only pain, perhaps, to *stop* after a while your progress along this pleasant declivitous, broad, straight boulevard to Beauty, when you have reached the goal—gone far enough.

You must not end your cure as the familiar old curate did, for whom after a severe illness an ignorant physician prescribed a generous glass of port wine after every meal. After five or six weeks, the doctor met his patient's wife and asked how he was getting along, and she said that his body seemed to be all right again, but that she feared his mind was giving way as he insisted on having nine meals a day, and she could not understand it. (This joke deserves to be listened to and smiled at because of its great age, if for no other reason.)

One may be obese after being lean,—rolling down so broad and straight a road!

False and misleading suggestion oftentimes comes in to influence one's opinion and belief concerning one's own intake of flesh-forming food. Food-things are often not what they seem. A single day's food-supply of lettuce would be thirty pounds or so, and of apples, tomatoes, cucumbers, or strawberries scarcely less. Besides water, these have much cellulose, but women, unlike rats, guinea pigs and rabbits, cannot build body-fat out of cellulose nor out of water. Most of us need more water, and the taking of it improves our digestion and nutrition.

In this matter it is figures that talk, we must sometimes recall, not opinions; knowledge, not guesses; facts, and not imagination. A box, that is a bushel, of lettuces looks a meal for the two-ton Tyrannsaurus Rex (Osborn), king of the earth's historic beasts, but in reality is not one day's diet for a man one-thirtieth part as large. Similarly, a big water melon looms immense in the Northern housewife's eyes, perhaps, but to the pickaninny in Southern Georgia it means only a moderate amount of sugar and water plus an amazing aggregate of joy,—and joy helps digestion; but that it furnishes actual calories of fat I am not as yet so sure! But as the pickaninny needs joy and water and sugar more than fat. it is as it should be. May the watermelon crop never fail!

A dozen or fifteen ideas and hints may be lined up to stand for a sort of fattening "system," in excessive or disliked leanness. Here they are:

1. *General food-abundance.* Four or five hearty meals each day, even though a hearty meal is one that disturbs for a few hours the action of the heart.

2. *Fats, both animal and vegetable,* in abundance. Fat meats, butter, suet, cotton oil, olive oil, corn, chocolate, milk, and cream that is cream. (The cows still do produce cream, just as cattle still have sirloin steak, but we now have to take them mostly on faith.)

3. *Starch.* Grains, breads, cakes, potatoes, vegetables, macaroni, tapioca.

4. *Sugar.* One of the curious things about the food-conservation propaganda is that it has not talked at all about glucose—grape sugar. There probably are millions of tons of glucose made in this country every year, and with a mixed diet for most folks it is, in reasonable amounts, a perfectly wholesome food. It is about four-fifths as sweet as cane sugar, and could be sold at retail for about 3 cents per lb. Why the use of that great supply of nutritious sweetening has not been suggested, I am sure I cannot tell. The reason, I believe, is largely a psychological one: there is a prejudice of long standing against glucose, but more against the name than the sugar. Glucose (grape sugar), corn syrup, sorghum (Chinese sugar cane), syrup, honey.

Chocolate combines fat, and usually sugar, with a large per cent. of protein, and therefore, is very concentrated nourishment. Chocolate (40 cents per lb.) is worth five times as much, so far as energy is concerned, as rump steak at the same price. Dates come in here, having much sugar in them.

Sugar is an instinctive food of most brutes, and therefore is "good food." Saccharin has no food value at all, and is used in cases of diabetes for sweetening where sugar cannot be allowed.

5. *Breads and cereals.* Starch in abundance is in all of them. Fat is found in corn meal. Bread is the staff of life, and no slender staff either, being a complete food.

6. *Storage, or underground, vegetables.* Tubers, such as potatoes, turnips, beets, etc.

7. *Nuts and dried fruits* are important fat-producers, if properly chewed. Chestnuts, cocoanuts, walnuts, peanuts—all are inexpensive, in normal times.

8. *Water,* lots of it. Up to the limit where too much laxity of bowels ensues, with meals and between. (The tap-water here in Boston and Cambridge, apparently, from the health-board reports, is supposed to be ahead of that of any city of its size in the country, based on the percentage of typhoid.)

9. *Putting on fat.* Abundant holiday, which is "freedom from care." Take off your soul the burden of this stupendous world! Drop it and see it smash. No one can be well nour-

ished who is "worried to death." Some of the worriers need simply a holiday, whether it be going away or even a mere change of mental attitude.

10. *Indolence.* Rest and sleep. Save the "sugar" in the blood and in the muscles, glycogen (starch). Cut down the outgo. Cultivate repose. Calm down. Be lazy awhile.

11. *Out-of-door life.* Enough to develop a good appetite and sound sleep, but not enough to use up the food too rapidly. Good digestion follows. Out-door life is a tonic to anabolism.

12. *Advice from an expert physician,* one who really understands about the internal secretions and their uses. Find one who has really and practically studied these and knows how to use them with valuable therapeutic effect, an endocrinologist.

13. *If expedient, a warm climate.* A region not hot, but warm enough to encourage and allow the accumulation of body fat. (Five minutes in a cold bath is enough completely to burn up the glycogen and "start" the destruction of your body-fat.)

These may prove to be the "lucky thirteen" for some folks, possibly for some of you!

For a bit of more explicit advice: Take, *in addition to the regular meal,* for breakfast, two large dishes of some cereal, with at least a quarter-pint of thick cream and abundant sugar; this is to be taken before or after the usual meal. This nearly always "works," and would usually fatten a "bean-pole" into a "barrel," unless there be a "leak" out through the pituitary or some other gland.

But don't neglect the psychological factors. Try it a month, and keep a record of your weight weekly. Weigh yourself *accurately* every week, wearing *exactly* the same clothes, and at the same time of day, on the same scales,—in short, by the same method and the same conditions throughout. Then you will really know how much you are gaining in weight from day to day.

Like the neighbor-youth, when I was a boy, who told people sometimes that he thought it was "nice to be a little bad," the overlean woman must learn to be (temporarily at least) a little lazy, go one step, if not two, toward the hilarious, life-long dissipation of the all-too-familiar woman of forty who has lived so fatly that she needs help, often a real boost, to step up the twelve-inch step of a car (be it a Pullman, a "trolley" at five cents per ride, or a limousine at $2000 per year).

One must stoop to conquer, but here the stoop is a moral virtue too. One must be a "little bad" and over-eat and over-sleep and over-idle all around. Slide down a bit on the steep descent which the great Roman has claimed to be so easy.

Common sense is, of course, of all kinds, the most uncommon; but that precisely is what one most needs here,—common sense, based on real knowledge and driven by a firm and consistent will.

Bad as it is, better have a flat foot than a "flat head"! Climbing is a stunt, they say, but any one can fall. Charity is commendable, but see to it that it begins at home, for altruism is good, but without egotism it cannot persist. "Defy nature if you choose, but you will pay the price."

You cannot build body-fat out of chagrin or longing or good intentions, nor beauty out of hopes. And after all is objected, the Major *is* a very fine man, and your Lieutenant would be, or at least might be, a joy forever. Perhaps.

Plump up, then, and live happy ever after!

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HEARING TEST APPARATUS.

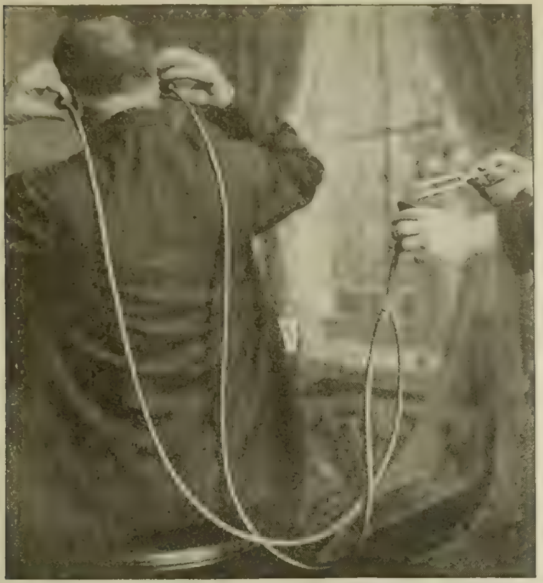
By Joseph Prenn, M.D., Boston.

The accompanying photographs tell the story. The patient sits in a chair with both ear-pieces adjusted closely to his ears.

The examiner stands behind him. The sound carrying from the examiner to the patient is not affected by the length of the tubing. The ones used in this illustration are five feet long, but the writer has also used ten and twelve feet of tubing with the same result.

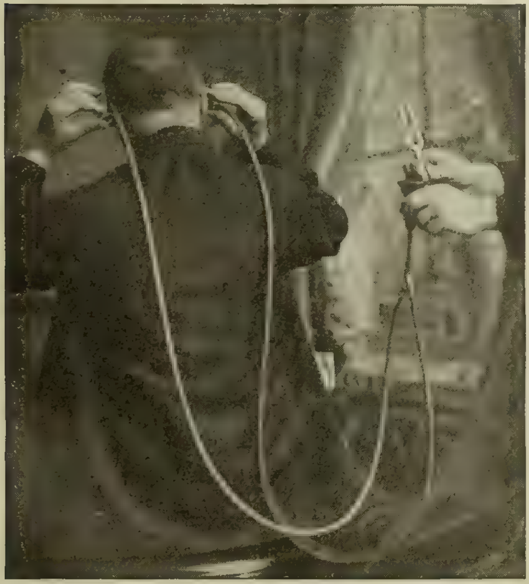
The examiner whispers into the speaking tube numbers or letters of different scales, such as 99, 44, 55, or 66, or a, oo, and s, first with both tubes open, then by compressing one tube or the other, thus shutting off the sound to the corresponding ear. If the patient claims deafness of the left ear, for instance, the right tubing is compressed, and vice versa.

The tuning fork is of more positive value. A tuning fork of 64, 125, or 512 seconds is



struck and the prongs are applied to the lumen of the speaking tube, which tests the air conduction of the patient. Then the tuning fork is struck again and the handle is gently applied to the rim of the speaking tube or over the rubber, as, for instance, of the stem of the "Y" piece metal, which tests the bone conduction of the patient. The order may be reversed. Here, again, by compressing one tube or the other, or by telling the patient to remove one earpiece or the other, the air or bone conduction, respectively, is tested separately from the same median point.

The patient is in no wise aware whether the air or bone conduction is being tested.



What is the idea? It may be used ordinarily without confusion to the patient, and with time-saving to the physician. (Weber and Rinné tests.)

It is particularly intended for use in cases of suspected malingering, in doubtful cases in the examination of recruits, and in certain accident insurance cases. In absolute nerve deafness the labyrinthine test, of course, will have to be resorted to.

The writer wishes to thank the Aural Department of the Boston City Hospital, where the idea of this apparatus first came to his mind, and the Massachusetts Charitable Eye and Ear Infirmary for the interesting discussion when he was made to elaborate upon the method of its application.

IDIOPATHIC EPILEPSY A SYMPATHICOPATHY.

By Edward A. Tracy, M.D., Boston.

(*Concluded from page 874.*)

In bringing this essay to a close, it appears desirable to review briefly the phenomena reported herein that demonstrate the diseased condition of the sympathetic neurones in idiopathic epilepsy. The chronic vasoconstriction spots which have been discovered, with their intensifying and fading while under observation,—even while the patient slept,—demonstrate a diseased condition of the sympathetic neurones involved in their production. The many abnormalities of the reaction times show, likewise, a diseased condition of the sympathetic neurones, upon which, it has been shown, the reaction times depend. The "newborn" vasoconstriction spots discovered on the photographs demonstrate a diseased condition of the sympathetic neurones involved in their production. An interesting and significant fact connected with these latter spots is their relation with an outburst of convulsions in the patient photographed. The photographs showing the "newborn" spots were taken at 11 a.m., Sept. 25, 1916. That night a series of six convulsions started at half-past two o'clock. There had been none for nine days. The reaction times taken at 6.30 p.m., the same day, showed an increase of irritability of sympathetic neurones. The increased irritability so frequently demonstrated in sympathetic neurones, preceding convulsions, reveals a relation between the diseased sympathetic neurones and the most terrible phenomenon of this disease,—the seizures.

While the clinical manifestations of diseased sympathetic neurones in idiopathic epilepsy, that have been described in this essay, demonstrate clearly the sympathicopathy of this disease, it remains to be shown that there is a pathology for this sympathicopathy. Echeverria, in his book "On Epilepsy: Anatamo-pathological and Clinical Notes," wrote in his Preface to it, the following: "Five additional autopsies have regularly displayed the alterations I have pointed out in the sympathetic. The lesion is constituted mainly by a proliferation of connective elements, and their subsequent substitution to the nerve cells and fibers, finally undergoing retrograde degeneration. The change exhibits itself, in various stages, throughout the nerve plexus, around the vertebral and cerebral arteries, and in the cervical sympathetic. It operates essentially in the alterations of the capillaries in the brain and medulla, and I am not aware of any mention made of such a lesion of the sympathetic as proper to epilepsy." Besides these five cases alluded to in the Preface to his book, Echeverria tabulated in his text twenty-six autopsies on epileptics.[2] In three of them no examination of the sympathetic was made. In four, only the head was opened. In one, the microscopical examination of the nerve centers was not made. These eight cases are, of course, negative, as the sympathetic system was not examined. In every case in which the sympathetic system was examined, a pathologic condition of it was found. The cases, eighteen in number, are here copied, with that part of the protocols only which refers to the sympathetic system. The ages of the patients autopsied ranged from one to sixty-eight years.

Female, 38. Epilepsy and dementia. Degeneration of the medulla and sympathetic.

Female, 26. Epilepsy. Sclerosis of the sympathetic.

Female. Epilepsy. Sclerosis of sympathetic.

Male, 20(?). Epilepsy. Pigment infiltration and amyloid change of sympathetic.

Male, 3. Epilepsy. Degeneration of the medulla, pneumogastrics and sympathetic.

Female, 22. Epilepsy. Cervical sympathetic, and solar and lumbar ganglia changed in structure.

Female, 1. Epilepsy. Medulla oblongata and sympathetic degenerated; abdominal ganglia with pigment infiltration.

Female, 35. Epilepsy. Deep alteration of the whole sympathetic ganglia.

Male, 67. Epilepsy. Sympathetic, displaying sclerosis.

Male, 16. Epilepsy. Sclerosis and pigment infiltration of the sympathetic.

Female, 31. Epilepsy—alcoholic. Pneumogastrics and sympathetic very much altered.

Male, 9. Epilepsy. Medulla oblongata and sympathetic degenerated, with great hyperplasia of connective elements in the solar plexus, and disintegration of the ganglionic cells.

Male, 43. Epilepsy—alcoholic. Sclerosis and fatty changes in cervical sympathetic.

Female, 6. Epilepsy, idiocy. Medulla oblongata and sympathetic very much altered.

Female, 35. Epilepsy and dementia. Medulla and sympathetic deeply injured.

Female, 68. Epilepsy and dementia. Sclerosis and fatty degeneration of the sympathetic.

Male, 18. Epilepsy—lasting one year. Gelatinous degeneration of the solar ganglia, also present in the cervical sympathetic.

Whether the knowledge that idiopathic epilepsy is a sympathicopathy will help to unlock the many mysteries of this disease,—the mystery of its onset, of its seizures of unconsciousness and of convulsions, of its dementia; and whether it furnishes a key to a more successful treatment,—it remains for further research work to disclose.

The photographs from which the plates were made, I owe to the kindness, here gratefully acknowledged, of Dr. E. E. Southard. They were taken at the Boston Psychopathic Hospital by Mr. H. W. Taylor, of Cambridge, Massachusetts. Without them, photographic proof of the correctness of the observations on vasoconstriction spots reported in this essay would be lacking. This proof is furnished by the "newborn" vasoconstriction spots on the plates, to which attention has been called.

REFERENCES.

[1] Tracy: The Normal Reaction of the Skin to Stroking. BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. clxxv, No. 6, pp. 197-199.
[2] Echeverria: On Epilepsy: Anatamo-pathological and Clinical Notes. New York, 1870. p. 138.

Society Reports.

THIRTY-SECOND ANNUAL MEETING OF THE AMERICAN ORTHOPEDIC ASSOCIATION.

Army Medical School, Washington, D.C., April 22-23, 1918.

(Concluded from page 878.)

DISCUSSION.

Major Rich, M.R.C., said the papers of Major Rugh and of Major Corbusier were of great interest. The keynote of Major Rugh's paper was "we are at war," and that of Major Corbusier's was "the stress of circumstances." Ideas had changed during the past six months. Many cherished ideas had gone by the board. He felt that everything Major Rugh had said was practical, except that the orthopedic man should instruct the regimental surgeon. There were enough orthopedic men to go to the camps and do the work well. A certain amount of surgery was permissible for orthopedic defects in drafted men. Those that should be sent home were the men with rigid flat foot. Operations might be performed on bunions of the 5th toe or 1st toe, and on ingrown toenails. The orthopedic man could do much by non-surgical treatment. In the South the special point they had been laying emphasis upon was the weight-bearing capacity of the foot. With this in mind, feet were classified into four groups: (1) acute foot strain; (2) weak feet, requiring ordinary felt pad for support; (3) ankle valgus—in this the weight-bearing function is thrown where it belongs; (4) lateral arch conditions. Here the weight is thrown outside of the foot. Correction and support were needed. In this connection it was advisable to say that all necessary alterations could be made with an outfit costing ten dollars. It was waste of government money to get $1800 outfits.

Colonel C. L. Starr said that he had learned by experience some things in regard to foot strain. One point was in regard to operation. No man operated upon would be fit for line duty. A certain degree of flat foot could be used in front line work, but when it passed that point it was no good to try to use it. The man was a nuisance to the officer and to his fellow soldiers. It was best to put these men into the line of communication. A man with claw foot could never make a soldier. It was impossible for him to march and carry a pack for twenty miles. He could be put into the labor battalion for the line of communication work. The pads which are called Cook's wedge, Robert Jones was responsible for. The heel is carried forward on the inside. They give wonderful service. In regard to the question of curing flat foot,—many men come into the camp with muscularly weak feet. The drill was made too hard at the beginning and carried too far, with the result that the feet give way. A little more judgment in the early stages of the training would eliminate much foot strain. In regard to the reconstruction company, it was noticeable when many men were drilling that the drill sergeant made them place the feet at an angle of 45°, although it was more often at 90°. He thought the Association should make its opinion known that this angle of placing the feet was a very bad one. The position of attention should be with the feet parallel, instead of at 45°.

Dr. Myers said that there was a point to be observed in regard to the short tendon of Achilles. It would be well to consider whether a flat foot could be improved by exercise or would continue flat. A very short tendon indicated hypertrophy of the calf muscles, and exercise would increase the difficulty. With the anterior muscle exercise would be more beneficial.

Major J. Ridlon, M.R.C., said that during four months' supervision of various camps he had been led to form certain conclusions. The question was, what flat feet should be rejected by the examination boards? The answer was that *all rigid* feet should be rejected. All flexible feet, so far as arches went, should be accepted. As to the short Achilles tendon, if not actively painful, they could be compensated in two ways,—a stiff shank could be worn so that there was no motion between the os calcis and ball of the foot, and the other way is to raise the heel of the shoe. The question as to what operations should be done on recruits to make them fit for service, should be answered by saying that *no operations* should be performed. Every soldier sworn into service who was compelled to submit to operation, had a positive ground of complaint against the Government because he submitted to an operation for disability, in the line of duty. The key of the whole foot problem was in the intelligent, patient, persistent attitude on the part of the orthopedic man with the line officer. Most line officers with whom the speaker had come in contact were men of the Regular Army, and these men had not much consideration for surgeons in the Regular Army. They had to be taught that the Medical Reserve man was different from the Regular Army surgeon. After a while, when they want good service, they are apt to go to the Medical Reserve man. Until the line officer is convinced that the Medical Reserve officer is able to make the men efficient, to do things that have not been done before, the medical officer is up against a hard proposition.

Major Ryerson, M.R.C., said he felt that not enough had been said about traumatism of the foot due to arthritis. Many cases were seen with no true static trouble. There were some cases in which the patient should be operated on if nothing foolish was done. Simply to remove the part of the metatarsal head that was causing the trouble, by chiseling off the inner side, the foot would still be extremely useful. The foot would be normal within three weeks. In camps it was not often easy to get proper shoe-making material. If possible to get it properly done, a projection of the heel on the inner side would help in many cases. The experience of the Allies would not be thrown away on American army officers. The order had recently been sent to camps that no operations should be done for derangement of the knee joint, for hallux valgus, etc.

Dr. H. P. H. Galloway said he had listened with a certain degree of amazement to the account of efforts made for the salvage of physically imperfect men. He was glad to hear Colonel Starr speak of the Canadian viewpoint in this matter. Canada had sent 100,000 soldiers and had made nothing like the attempts at reclamation which had developed already in the United States Army to fit the men for service abroad. Men operated on to make them fit for service in the front line would in time be found liabilities rather than assets. Positions should be found for these men in the Army where there would be comparatively little demand upon their marching capacity.

Captain H. Lewin, M.R.C., said that at Camp Grant among the men he had come across a chiropodist and a masseur. He had at first feared that these two individuals would give themselves airs, but he found that they were very helpful, and that the best thing he ever did was to take them under his direction. The chiropodist taught him many useful hints in regard to putting pads on the foot, and a preparation called Griswold salve, for sticking the pad in place just where it was wanted. At Camp Taylor there was neither chiropodist nor masseur, and he would have been glad of their services. The men had been glad to have the Jones heel put on their shoes. They had to pay one dollar to get this done. In regard to the making of flat feet by too strenuous drill, there was another point to be noticed. Men in hospital with grippe and tonsillitis were allowed to walk around all day in slippers. This was at a time when all the bony tissues were relaxed from recent infection and there was no support for the foot. This was extremely undesirable. He had always insisted that the regular shoes be sent over and the necessary support thus given. Another point was that soldiers put on foot exercise should be carefully supervised. Many times they did the exercises absolutely wrong, and more harm than good resulted. In regard to malingering, he had seen one man who had declared that he could not bend his leg for fourteen months. He was put under anesthesia and the leg easily flexed. A cast was put on under the anesthetic. The man was sent back to full duty in seven days.

Captain Marshall, M.R.C., said that the malingerer was a bad class of individual to deal with. Very often the medical officer was positive that there was nothing wrong and yet it was very difficult to prove. These persons were often of very low order of intelligence. One point he thought should be brought to attention of the line officers. At Camp Taylor he had noticed that the new recruits were put on forty hours' drill before they were fitted with army shoes, or when they had just been given new shoes. This was a very likely cause of disability. Anyone who had worn new shoes for one day would know that it would be a very hard matter to wear them for many hours of drill. This poor arrangement was carried on at the same time as the inoculations against typhoid, smallpox, etc. The men were suffering from fever or malaise of more or less severity. Such procedures were contrary to all good orthopedic measures. In regard to the alignment of the foot, good results were secured by raising the inside of the heel, and thus placing it in better relation with the os calcis and the tibia. At Camp Johnson there were a number of men on service in the quartermaster's department. These men did not require a high degree of foot efficiency and were able to carry on such duties perfectly well. In regard to the camp cobbler,—often one was not obtainable. At Camp Taylor the services of a carpenter had been found quite efficient. The work was not very ornamental, but it had been the mean of relieving a number of trying foot conditions.

Major S. C. Baldwin, M.R.C., said that he could not agree with some of the statements that had been made. He said that the Surgeon-General's Office kept the chiropodist where he belonged,—in the background. These men had been trying to get in. Even if Captain Lewin had learned something from them, he did not need to tell where he had learned it. A few osteopaths had been found in the camps, but if they were going to have massage they should insist on the right kind of massage. He agreed with Colonel Starr that one could not make good soldiers out of men with bad feet, but it was necessary to give them what treatment one could. He could not agree with Major Corbusier, who objected to supporting the long arch of the foot and yet supporting the transverse arch. If the longitudinal arch should not be supported, why should the transverse? Both would weaken the muscles. Robert Jones feels that in paralysis of the extensors the arch should be supported all the time. When the tendons that support the ligaments are too long the tissues never regain tone when relaxed. In his opinion, Major Baldwin said, the thing to do was to give more treatment and use such supports as would keep the arches up until strong enough to be given more weight and tension. This could be done by giving more exercises and baths and keeping the foot in a correct position. The support should not be under the heads of the metatarsal arch: they should be back of the heads of the metatarsals. This would give support without irritation of the joints. One could not make first-class front line soldiers out of foot inefficients, but one could make men who could do useful work in other directions. It took time to get back tone to stretched ligaments, but support, exercise and massage would accomplish this end, if properly applied.

Dr. I. Nathan said that he had never seen men with relaxed feet, that is, those where the ligaments and muscles had been stretched, who were able again to use their feet as the normal person does.

Dr. C. Riley said that in the examining boards they had been putting flat feet into Class C. The direction of the os calcis should be considered. It should be slightly upward, forward and outward, and if the direction were turned another way there would be trouble. In the Munson shoe the depression of the heel is deep on the inside instead of the outside. The ball of the foot sinks deepest. To get a good shoe the last must be made that way. Care and attention should be paid to the making of the last. Men often had arches too long for the shoes they were wearing. It would be worth while for orthopedic men to get together and follow out the methods of Cook and Whitman. This would eliminate trouble and the making of so many shoes that had to be fixed over.

Dr. M. J. Lewin of New York asked to be allowed to address the members on the subject of chiropody. He stated that he was the head of the Chiropodists' Institute of New York, and would ask the members to recognize the work they were doing.

Major Whitbeck said that the work of caring for the feet of the men in camp was now well coördinated. The question of operations was settled by the last order from the Surgeon-General's Office.

Dr. John Porter said he had seen men with flat feet who were discharged, although they had perfectly strong feet. He recalled the story of a mountaineer who had gone to the camp to enlist and was turned down because he had flat feet. He complained bitterly at this decision and said that he had walked 120 miles to enlist and did not want to have to walk back again.

Major Whitbeck said that there had been difficulties in the pioneer work, but that now the men chosen were able to stand the marches well. The question as to what cases to accept and what not to accept was still a debatable one. Judgment must be used to determine what men were fit for front line work. Those who were not should still be able to give efficient service to the Government in some capacity.

MAJOR H. CORBUSIER said that he would recommend putting all doubtful cases into the reconstruction camp. Without this test it was absolutely impossible to tell whether a man would be fit or not. That was a true story told by Dr. Porter. He had heard it down South too. According to regulations, one should not accept cases of subluxation of the foot, but one should find out if the man has symptoms or not. The suspected case should go into training camp. His psychology should be studied. Their Canadian friend said, "don't try and salvage men," but if one excluded men for flat foot it would have a bad moral effect. Such a man should be put into training to see what he was fit for. All kinds came to the camp, even one case of peg-leg, who had been examined on one side only! Sixty-five per cent. of these men could be saved. The ability to march was the final test. The rest of the men could be made to work on selective duty. In regard to supporting the longitudinal arch, it was necessary to guide the foot and put it back into proper position for weight-bearing function. The transverse arch should also be supported to some extent.

MAJOR RUGH said that the transverse arch condition was extremely rare. Corns and callosities would disappear when proper shoes were fitted, and the chiropodist was not necessary. In regard to the special reconstruction sections, it was necessary for the orthopedic men to instruct the officers how to drill the men. In France there were no men and there was no time to take care of the feet. The men would suffer if the regular officers did not understand these questions. The safest rule to observe is to catch the case before it breaks down. The potential weak foot must be discovered and trained.

MAJOR J. P. LORD said that he thought operation had been over-criticized. Comparatively little had been done, but the men had been able to go back to full line duty. This was before the recent order prohibiting operations. One objection to operation was that it gave the malingerer the upper hand. Hard reconstruction training was the best way to deal with these men.

DR. JOHN PORTER asked for a vote of thanks from the meeting for the coöperation from the Surgeon-General's Office, without which the success of the meeting could not have been attained. This was seconded and unanimously carried. There being no further business, the meeting adjourned.

* * *

NEW ENGLAND PEDIATRIC SOCIETY.

THE fifty-first meeting of the New England Pediatric Society was held at the Boston Medical Library, on Feb. 1, 1918, at 8.15 p.m.

Dr. Charles Hunter Dunn of Boston in chair.

The following papers were read:

1. President's Address—"Tuberculosis in Infancy," Charles H. Dunn, M.D., Boston.
2. "Clinical Spasmophilia," W. W. Howell, M.D., Boston.
3. "Experimental Studies on Growth after Feeding Certain Ductless Glands," Warren R. Sisson, M.D., Boston.

Light refreshments were served after the meeting.

DISCUSSION.

DR. F. B. TALBOT (Dr. Sisson's paper): I would like to say in this connection that Dr. Sisson has brought to our attention one of the most interesting and most important phases of the advance of pediatrics. The question of growth is negative in the part of the paper he presents, but I have no doubt he could have gone on to tell us more and more about the growth and the effect of water-soluble and fat-soluble elements, which are so important for growth. I expect, as time goes on, all of us will be talking and reading papers on this advanced phase of pediatrics.

DR. F. B. TALBOT (Dr. W. W. Howell's paper): I think Dr. Howell's paper is very interesting and instructive. I agree in general with what Dr. Howell says, in that the exciting cause must be found out. I do not agree with him in the impression that he gives that the metabolism has nothing to do with it. I have seen instances in which the spasmophilic symptoms were brought on by an over-dosage of sodium salts and stopped almost immediately by the subcutaneous injection of magnesium salts. I believe the salts are intimately connected with spasmophilia.

I think Dr. Howell would be interested in Dr. Brown's article on clinical observations of Canadian babies. He noticed that when a baby had spasmophilia he usually was constipated, and that when he had diarrhea these symptoms were absent. This fits in very well with the theory that sodium and potassium salts have a very definite connection with the spasmophilic symptoms.

I have seen the same symptoms come almost immediately from the use of potassium or potassium citrate in pyelitis and disappear with the use of calcium, without any change in the progress of the pyelitis. Of course pyelitis is a disease which takes months and months to cure, but these symptoms were cured in a few hours, so, in that respect, I disagree with the conclusions.

Dr. Smith (Dr. Howell's paper): I would like to ask Dr. Howell one or two questions. First, what kind of calcium did you use? Second, how much was given?

I have seen considerably fewer cases of spasmophilia than Dr. Howell, and I imagine I have been particularly fortunate in the results from calcium and phosphorus and cod liver oil. I have not yet seen a patient who did not respond favorably to that method of treatment.

One child I saw had typical attacks of spasmophilia which came on without any apparent cause that I could discover. I advised phosphorus and cod liver oil, and in forty-eight hours the symptoms had entirely disappeared.

I have another child in mind whom I saw several times in three successive attacks. The first attack was cured by the giving of breast milk; the second and third attacks were cured with phosphorus and cod liver oil.

It seems to me there is more to be said of the cure by drug therapy than Dr. Howell recognizes in his paper. I agree with him that it is extremely important to continue searching for the exciting cause of the condition.

Dr. Howell (in closing): *Question.* What kind of calcium did you use? *Answer.* We used tri-basic calcium phosphate in cod liver oil, calcium lactate and calcium chloride.

Question. How much was given? *Answer.* We gave it in small and large doses, up to 75 grains of calcium chloride daily.

Since Dr. Smith has brought up the question of treatment, I must confess that at first I was rather enthusiastic about the use of calcium, but it fell down so many times that I have rather lost faith in it. Babies would have manifest signs, even when the calcium was being given.

Book Reviews.

Medical War Manuals, Nos. 1, 2 and 3. Philadelphia and New York: Lea and Febiger. 1918.

These form a set of useful little books which should prove of immense service to medical officers in the present war. The books are small, of a size to be conveniently carried in the pocket of a uniform, and furnish valuable data to medical officers face to face with actual war conditions.

Medical War Manual No. 1, "Sanitation for Medical Officers." By Edward B. Vedder, M.D., Lieutenant-Colonel Medical Corps, U.S.A. This is a guide for sanitary work in the Army. As far as possible the information has been made official by the inclusion of sanitary orders and circulars bearing on the topics discussed. The book covers sanitation on the march, in camp, in the trenches, and on the battlefield; gives information about insects concerned in the transmission of disease, and tells how to guard against their breeding; it deals also with transmissible diseases and presents the most recent knowledge concerning the etiology and transmission of the disease in question, with all information necessary upon which to base a sanitary campaign for its control.

Medical War Manual No. 2, "Notes for Medical Army Officers." By Lt.-Col. T. H. Goodwin, R.A.M.C., with an introductory note by Surgeon-General William C. Gorgas, U.S.A. This book deals with the general problems which a medical officer will encounter on the Western Front. The first section of the book is devoted to the Organization and Administration of the British Army, with special reference to the medical services, how the wounded are cared for, duties of medical officers behind the lines and in battle. The second section gives general information about War Surgery, treats the various kinds of injuries and their care. The third section deals with Sanitation in War, as regards the sanitary units in the field. Quoting from the Foreword of Surgeon-General Gorgas: "These 'Notes for Army Medical Officers' are based upon the long practical experience of the distinguished author at the front, and include much information which will be of the greatest value to members of our Medical Service as they go abroad on active duty with troops in France."

Medical War Manual No. 3, "Military Ophthalmic Surgery." By ALLAN GREENWOOD, M.D., Major, M.R.C., U.S.A.; including a chapter on Trachoma and Other Contagious Conjunctival Diseases, by G. E. DESCHWEINITZ, M.D., and one by WALTER R. PARKER, M.D., on Ocular Malingering. This book has been compiled with the idea of providing, in a condensed form, suggestons that may be helpful to medical officers who have to deal with the special ophthalmic problems which arise in the daily routine of active army medical work, especially in the dressing stations and hospitals throughout the war zone. It is not a complete treatise on ophthalmic surgery, but deals with the problems which will confront the war surgeon. The chapters concerning trachoma and the danger of its spreading through an entire army, and the tendency of recruits to malinger in physical examination, are of much interest.

The Institutional Care of the Insane in the United States and Canada. By HENRY M. HURD, WILLIAM F. DREWRY, RICHARD DEWEY, CHARLES W. PILGRIM, G. ALDER BLOOMER, and T. J. W. BURGESS. Edited by HENRY M. HURD, M.D., LL.D. Vol. I. Baltimore: The Johns Hopkins Press.

This extremely valuable and careful history of a great subject is a book of more than passing interest; and it is a great credit to the American Medico-Psychological Association that it should have undertaken and fostered the production of such a history, no less than that among its members should be found a body of men, both able and willing to carry out the immense labor involved. The volume which has now been published shows not only evidence of careful research in the vast array of facts that are here preserved, but evidence of careful editing in the presentation of these facts. There is a unity to the whole, and a notable lack of repetition that is the certain proof of the care and skill with which this part of the work has been done.

This volume will well repay anyone for the time required for a careful reading, and among the topics treated, the chapters on the early legisolation for the insane, the development and extension of methods of treatment, and that on training of nurses and attendants are, perhaps, especially noteworthy; but the exceedingly clear account, in spite of its condensation, of the philanthropic work of Miss Dix will probably attract the attention of more readers than the chapters on the more strictly medical aspects of the subject. The chapters on the laws in relation to the care and commitment of the insane, the one on insanity among the negroes, Indians, Chinese, and Japanese in the United States, and that on the statistics of insanity, show the care with which various aspects of the great problem of mental disease have been considered.

An Intermediate Textbook of Physiological Chemistry with Experiments. By C. J. V. PETTIBONE, Ph.D. C. V. Mosby and Company. 1917.

This book presents a rather disappointing attempt to express modern physiological chemistry briefly and easily. To this end there is entire omission of debatable material, and with this omission one feels that stimulation and suggestiveness have also gone. It is hard to picture the group of students for whom the book is intended. If medical, far too little is given; if collegiate and in preparation for medicine, it would seem that the time could be better spent in more fundamental general chemistry.

The first part gives a twelve-chapter summary of current ideas upon the general composition of foods, the mechanism of digestion, absorption and excretion. The second part consists of laboratory exercises of simple nature which are well selected and well described, but would require considerable elaboration if used with medical classes. Omission of recent microchemical methods is necessary in a book of this character and rather definitely precludes its use for reference by hospital workers.

Urology: Diseases of the Urinary Organs; Diseases of the Male Genital Organs; The Venereal Diseases. By EDWARD L. KEYES, Jr., M.D., Ph.D.; Professor of Urology, Cornell University Medical College; Surgeon to St. Vincent's, and Urologist to Bellevue Hospital. With two hundred and four illustrations in the text and eighteen plates, four of which are colored. New York and London: D. Appleton and Company. 1917.

The Van Buren and Keyes textbook, published in 1874, was generally considered, and was, undoubtedly, the best book of its kind in the English language. The present book, the third in line following it, contains in its nine hundred pages an excellent and complete summary of the present-day knowledge of matters pertaining to genito-urinary surgery and the venereal diseases. Recent advances, as the younger Keyes states in his preface to the present volume, have largely destroyed the scientific value of the preceding ones, and this book is in great part new. The sections devoted to Cystoscopy, Radiography, Renal Function Test. Renal Infections and Tuberculosis are new. The book, as a whole, is of greater clinical value than its predecessor, not only because it contains the more recent knowledge on these subjects, but because its author's increased maturity and experience have enabled him to put more of himself and his own work into it. Adequate experience, a keen appreciation of the perspectives and relative values of its many subjects, expressed in strong, vigorous language, make this volume a satisfactory textbook and, what is much more rare, a pleasure to read. The illustrations are many and, for the most part, new. The publisher's work is well done. All in all, the book is worthy of its dedication. It comes from the pen of a son to his able and learned predecessor, his "beloved father."

Common Diseases of the Male Urethra. Being a Course of Lectures Delivered at the London Hospital. By FRANK KIDD, M.B., B.C. (Cantab.); F.R.C.S., Eng.; Assistant Surgeon, London Hospital; Surgeon in Charge of Genito-Urinary Department, London Hospital; Member of the International Association of Urology; Membre de l'Association Française d'Urologie; Member of the Medical and Military Committees of the National Council for Combating Venereal Diseases. With an Additional Lecture on the Clinical Pathology of Urethritis. By DR. PHILIP PANTON, Clinical Pathologist, London Hospital. With many illustrations. London, New York, Bombay, Calcutta and Madras: Longmans, Green and Company. 1917.

This book contains six lectures delivered at the London Hospital by the author, including one on the Clinical Pathology of Urethritis by Dr. P. N. Panton, Clinical Pathologist to that Hospital. It also includes various appendices which concern themselves with clinical matters pertaining to the study and the care of venereal disease. The book is quite apart from the ordinary run of small manuals and quiz compends so frequently published. It attains real authority and distinction from the recognized position and attainment of its authors, and also from the excellent work of its publishers. It is a small book, worthy of a place in any surgeon's library.

Collected Papers of the Mayo Clinic. Rochester, Minnesota. Edited by MRS. M. H. MELLISH. Vol. 8. 1916. Philadelphia and London: W. B. Saunders Company. 1917.

The 1916 volume from the Mayo Clinic contains about one thousand pages and one hundred monographs by forty-two contributors. The former classification is followed, and the volume is uniform with those of previous years.

Prominent among the very large number of monographs of general surgical interest are those upon syphilis and tuberculosis of the stomach; splenectomy: its indications, limitations and technic, is likewise treated in a most thorough and satisfactory manner. The urogenital section is also exceptionally good. But it is fruitless to endeavor to single out individual parts, when the whole is so admirable.

The illuminations are, as usual, entirely beyond adverse criticism. We notice that some monographs are still without conclusions in the writer's own words—a small but definite lack.

There is included in the volume a brief but most cordial appreciation of Dr. John B. Murphy, written by Dr. William Mayo; also a memorial notice of Dr. Emil Beckman. Everyone who knew Dr. Beckman, still a young man of forty-four at the time of his most unfortunate and unexpected death, will join in the warm tribute paid to him. His was a quiet but forceful nature; he was a kind and attentive host, an eager student and a skilful operator. The Mayo Clinic, his friends and his family, have lost one whom they loved much in proportion to the degree which they were privileged to know him.

Notes on the Causation of Cancer. By THE HONORABLE ROLLO RUSSELL. London: Longmans, Green and Company.

This monograph is another of the type produced by laymen, of scientific and humanitarian interest in the study and control of disease. It is based on the theory that the cause of all cancer is to be found in dietetic errors, either causing local irritation of the gastro-intestinal tract, or diffuse irritation from the absorption or elimination of toxic substances. Statistics of cancer are investigated and interpreted to support this hypothesis. The author does not deny, however, that other forms of superficial mechanical irritation also produce cancer. In a preface, Dr. F. Dawtrey Drewitt comments on the intense and earnest scientific spirit of the author, and the great misfortunte of his death just before the publication of his book, which has been completed by Mrs. Russell. Though doubtless not conclusive, such a work is of value as a contribution to the study and ultimate solution of the great problem.

The Intensive Treatment of Syphilis and Locomotor Ataxia by Aachen Methods. By REGINALD HAYES, M.R.C.S., etc. Second edition; revised. London: Baillière, Tindall and Cox. 1917.

The aim of this little book is to emphasize the value of the treatment of syphilis by the inunction method as practised at Aachen, although the author states in his preface that inunction of mercury must not be regarded in any way as a rival of the injection of salvarsan. As to the latter method, the present edition varies from the first, written three years ago, chiefly in its advocacy of shorter intervals between the salvarsan injections.

Much stress is laid on the technic of inunction as practised at Aachen; and the drinking of sulphur water, together with the employment of baths, is regarded as of great assistance in the cure. The writer concludes that in the early stages syphilis is best treated by salvarsan used in conjunction with mercury intensively administered. Later on, when the nervous system has become affected, the arsenical preparations do not seem to be able to affect the parasites with any certainty, while mercury still retains that power,—and mercury, by systematic inunction, is by far the most efficacious method. A number of cases are cited in detail, which illustrate the good effects of inunction in cerebellar and spinal syphilis, cerebral gumma, early tabes, early general paralysis, severe gastric crises, etc.

Surgery and Diseases of the Mouth and Jaws. A Practical Treatise on the Surgery and Diseases of the Mouth and Allied Structures. By Vilray Papin Blair, A.M., M.D., F.A.C.S., Professor of Oral Surgery in the Washington University Dental School, and Associate in Surgery in the Washington University Medical School. Third edition. Revised so as to incorporate the latest war data concerning gunshot injuries of the face and jaws. Compiled by the Section of Surgery of the Head, Subsection of Plastic and Oral Surgery, Office of the Surgeon-General of the Army, Washington, D. C. With 460 illustrations. St. Louis: C. V. Mosby Company. 1917.

In the preface to the third edition of this excellent work, Doctor, now Major, Blair says: "The present revision is mostly confined to the parts related to injury and sepsis and their treatment, and was done by the Section of Surgery of the Head, Subsection of Plastic and Oral Surgery, as an expeditious method of giving, in a correlated form, the sum of the observations of the many workers abroad, to whose reports and recommendations, published, written and verbal, this section had access.

These were put forth in this form because, on the one hand, time did not permit of a full exposition of the subject in a special manual; while on the other it would be of less utility and somewhat awkward to attempt to present these observations while disregarding the well-established principles upon which they are based."

"The subject of peridental infections has been rewritten by Dr. Arthur D. Black, of Chicago, and read by Dr. Thomas L. Gilmer. Most of the illustrations were furnished by Dr. Black.

The chapter on local anesthesia has been revised by the original author, and that on general anesthesia by Dr. Ellis Fischel. Because of insufficient time, the other chapters, not referred to in this preface, were not revised.

The abstracting of the war literature and much of the assembling was done by Captain Robert H. Ivy, Medical Reserve Corps, of Milwaukee; while further reassembling and the reading of proof were intrusted to Captain Virgil Loeb, Medical Reserve Corps, of St. Louis.

The author has been collecting material for years for a general revision of this book, and certain matters referring to the repair of defects have been included in this revision, to which have been added some recent observations on cancer of the mouth." These additions add about one hundred pages to the previous edition.

The book continues to be the best single volume of moderate size that has been written upon the subject from the standpoint of the surgeon. It is again most cordially recommended to the profession.

Collected Papers of the Mayo Clinic. Rochester, Minnesota. Edited by Mrs. M. H. Mellish. Vol. VII. Philadelphia and London: W. B. Saunders Company. 1915.

The Mayo Volume No. VII, which bears the date 1915 but was distributed during the summer of 1916, is in the familiar size binding and general appearance of former years. Its thousand pages contain about ninety monographs written by thirty-seven contributors. For the first time, these contributors have titles following their names. These titles include "Director of Division of Surgery," "Professor," "Associate Professor," "Assistant Professor," "Mayo Foundation Fellow" and "First Assistant." The titles are either "In the Mayo Clinic" or "On the Mayo Foundation Graduate School, University of Minnesota."

The extraordinary surgical center, which is celebrated the world over, is, therefore, no longer simply a hospital or an isolated unit. It is a great clinic, closely associated with the medical department of a great university, and taking formal part in the education, not only of practitioners, as in the past, but of students also in the future.

The volume is, as usual, quite beside criticism; it must be read and studied. Conclusions carefully stated by the writers are included in many of the monographs, but they are still too often lacking. The illustrations are, of course, excellent in the highest degree. The printing and editing are admirable. It is entirely unnecessary to recommend the book to the profession.

A Treatise on Regional Surgery. By various authors. Edited by John Fairbairn Binnie, A.M., C.M., F.A.C.S., Kansas City, Missouri. Vol. II. With 213 illustrations. Philadelphia: P. Blakiston's Son and Company.

The second volume of Binnie's is similar in size to the first. It covers the abdomen, the genito-urinary system and the spine. Drs. Ochsner, Mayo, Morison, McArthur, Coffey, Judd, Powers, Paul, Haggard, Lower, Fenwick, Gibson, Smith, Thornburn and Thomson are contributors to the volume. The pleasant things written of the first volume apply in equal degree to the second.

The sections vary widely in length, as might be expected. Haggard condenses "Spleen and Adrenals" into nine pages, five of which are illustrations; while Lower devotes ninety pages to

"The Kidney and Ureter." Coffey contributes an excellent chapter (forty pages) on the pancreas: it includes experimental work which is of distinct value, and outlines what might be described as the ultimate surgery of the pancreas. Gibson's section of "Diseases of the Prostate" is both concise and interesting; it is very freely illustrated.

In spite of the workmanlike character of the monographs by the American writers, there is something in the chapters written by the Englishmen that is lacking in the pages of the Americans. The Englishmen seem to have lived with their subjects longer and more intimately; they have more fully digested what they have read and have more quietly considered what they have done; their chapters are, perhaps, not quite so precise, but they are apt to be more interesting, and possibly more convincing; and they are not so conservative as tradition would have us believe. They have a personal friendliness for the tissues and organs of which they speak. Harry Fenwick, for instance, writes as follows: "At its lowest economic estimate a healthy bladder is one of the best assets of social man. At its highest, it is a life-preserving mechanism; only the latter aspect concerns us. Speaking confidentially and without prejudice, the bladder is a siphon trap in an elaborate water carriage for the disposal of effete and dangerous products." This certainly gives an unusual and somewhat "old world" viewpoint of the bladder! Other examples might be quoted, but it is perhaps unnecessary to argue that British and French medical writings much more closely approach literature than do those which come from the hands of our own overworked and somewhat restless specialist; dictation has not yet wrested the pen from the hands of the British authors.

We await with pleasure the appearance of the third and final volume.

Injuries of the Face and Jaw and Their Repair, and the Treatment of Fractured Jaws. By P. Martinier, Professor of the Dental School of Paris, Dentist to the Seine Asylums, Honorary Director of the Dental School of Paris; and Dr. G. Lemerle, Professor to the Dental School of Paris, Dentist to the Hospitals. Translated by H. Lawson Whale, M.D., F.R.C.S., Captain R.A.M.C., T. (formerly Captain I.M.S.), The Oral Department, No. 83 General Hospital, B.E.F.; Visiting Surgeon to the Throat, Nose, and Ear Department, The County of London War Hospital, Epsom; Laryngologist to the London Temperance Hospital, and to the Hampstead General Hospital. New York: William Wood and Company. 1917.

A small book containing 350 pages; it may be slipped into the coat pocket. It is printed in clear, sharp, good-sized type and effectively illustrated by a large number of simple woodcuts, and a few photographs.

The book is divided into three parts:

I. External Prosthesis.
  (*a*) Remote or late;
  (*b*) Immediate.
II. Internal Prosthesis:
  (*a*) A guide to bony regeneration;
  (*b*) Internal prosthesis proper, replacing missing tissues in the depth of the organism;
  (*c*) Plastic prosthesis.
III. Fractures of the Mandible: lower and upper.

The author quotes Ambrose Paré's definition of Prosthesis: "Methods and devices for supplying that which, from natural or accidental causes, is lacking." It practically includes everything that can be done, or used, in the treatment of injuries of the face and jaws. The author says in the preface: "We have merely endeavored to systematize the innumerable efforts at prosthetic restoration which have been made, especially during the last fifty years."

Mr. Whale, the translator, a member of the Royal Army Medical Corps, is enthusiastic both about the importance of the subject and the worth of the author's contribution. He says: "To undertake the correction of smashed faces and jaws, from the moment of their arrival from the firing-line until they are fully restored, will satiate even an ambitious surgical appetite with a diet of science flavored with art. On any day the operator may be confronted with an emergency tracheotomy, a bullet to be removed from the prevertebral space, a carotid artery to be ligatured, accessory nasal sinuses (including frontal and sphenoidal) to be opened. The next day he may be busy with such delicate manipulations as raising the angle of a mouth, or with undertakings which must appeal to the spirit of a pioneer—for instance, moving large flaps, and grafting fat, cartilage, or bone. On the scientific side, the facial surgeon is brought into contact with the modern scientific product of dental education—the oral surgeon; and with the physician and bacteriologist, witness the (alas! too frequent) lung infections from septic mouths. And on the mechanical side, he is in constant collaboration with expert dental mechanics—the admirable workmen who construct ingenious splints to build out lips, shape noses, and so on. Truly, there is much interesting country in this surgical 'no-man's-land,' the face."

The book, therefore, gives both a French and an English point of view. The number and variety of procedures and apparatus are bewildering. The importance of the subject is far greater than the average physician realizes; and this little volume is a very definite and most acceptable aid to the surgeon. It is pleasant to have so much said so well in so short a space.

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MEDICAL ASPECTS OF THE MAN POWER BILL.

ON May 18, 1918, Mr. John F. Miller, representative for the First Congressional District in the State of Washington, introduced into the second session of the 65th Congress a bill (H. R. 12177) "to conserve and increase the industrial man power of the United States; to increase the efficiency of the military and naval forces thereof; enlarging the powers of the Public Health Service by creating and establishing therein a Division of Venereal Diseases; providing for the punishing of immoral persons afflicted with venereal disease, who go or attempt to go from one political division to another, and persons who assist or connive at the same; establishing internment hospitals; authorizing the Secretary of the Treasury to establish all needful rules and regulations relating to the subject matter of the act; and authorizing an appropriation therefor." The text of this important measure, which has been referred to the Committee on Interstate and Foreign Commerce, and which is of interest to physicians on account of its medical aspects, is in part as follows:

Section 1. That there is hereby created and established in the Public Health Service, a division known as the "Division of Venereal Diseases."

Sect. 2. That upon the passage of this act the Surgeon-General of the Public Health Service shall appoint an Assistant Surgeon-General to take charge of the division hereby created; or the Surgeon-General may appoint a commissioned medical officer in the Public Health Service to take charge of said division, which officer shall have the rank of Assistant Surgeon-General while performing said service and duty.

Sect. 3. That the Public Health Service, under such rules and regulations as the Secretary of the Treasury shall prescribe, shall, in addition to the duties, powers, and authority now vested in it by law, have power and authority: (*a*) to study, investigate, and conduct research work into the cause, prevention, and treatment of venereal diseases; (*b*) to construct, acquire, purchase, lease, or otherwise obtain internment hospitals, and to equip, manage, conduct, and operate the same; (*c*) to administer and apply medical treatment to persons afflicted with venereal disease while in said internment hospitals, and to issue orders of discharge therefrom upon cure; (*d*) to cause the arrest and prosecution of immoral persons afflicted with venereal disease who go or attempt to go from one political division into another, and to cause the arrest and prosecution of persons who aid, assist, or connive at the same; (*e*) to receive at such internment hospitals and to have authority and custody thereof for the purpose of examination or medical observation or treatment of all immoral persons afflicted with, or thought to be afflicted with, venereal disease.

Sect. 4. That it shall be unlawful for any immoral person afflicted with syphilis, gonorrhea, chancroid, or other venereal disease capable of being communicated to another person, to go or attempt to go from one political division into another. Any person violating the provisions of this section shall be declared guilty of a felony, and upon conviction thereof shall be punished by a fine of not less than $500 nor more than $1,000, or imprisonment for not less than six months nor more than one year, or both such fine and imprisonment in the discretion of the court.

Any person who shall aid, counsel, connive at, abet, or assist any person in the violation of this act shall be declared guilty of a felony, and upon conviction shall be punished by a like fine or imprisonment, or by both such like fine and imprisonment in the discretion of the court: *Provided,* That this section shall not apply to immoral persons afflicted with venereal disease going from one political division into another in charge of the officers of the United States or of any State, county, or city, nor any officer having charge of such persons; nor shall it apply to any such immoral person when in charge of a member of the military or naval forces of the United States.

Sections 5 and 6 define the terms, "political division" and "immoral person." Section 7 provides for details of prosecution. Section 8 authorizes the construction of internment hospitals for venereal disease.

Sect. 9. That it shall be the duty of the Public Health Service, or any agent or officer thereof in charge of any such internment hospital, to receive into such station or hospital and to administer medical and surgical treatment to any person afflicted with syphilis, gonorrhea, chancroid, or other venereal disease capable of being communicated to another person who has been turned over to or delivered to the officers in charge of such detention or internment station or hospital by any State, county, or municipal board of health or health officer, civil or military court, sheriff or civil peace officer, military or naval authorities, and detained or held therein for the purpose of examination or medical observation or treatment upon the payment by such State, county, city, or municipal corporation of the actual expenses incurred by the Public Health Service in the care, keeping, and treatment of such detained or interned person, and the custody of such detained or interned person for such purposes by the Public Health Service, is hereby declared to be in all things legal: *Provided,* That the State, county, city, or other municipal division by the enactment of a law, by-law, ordinance, or other legislative enactment of general application shall so provide if provisions be necessary.

Section 10 establishes penalties for patients leaving internment hospitals without permission. Section 11 authorizes the Secretary of the Treasury to make necessary rules and regulations for the discipline, vocational, educational and moral training of patients in such hospitals.

Sect. 12. That the Congress hereby declares it to be the policy of the United States that immoral persons afflicted with venereal disease when at large going from one political division into another are dangerous to the public health and inimical to the welfare and happiness of the people.

Sect. 13. That jurisdiction is hereby conferred upon United States Commissioners to hear and determine as examining magistrates all violations of this act creating or defining misdemeanor or felony, and if upon such hearing it shall be established to the satisfaction of the commissioner that the person charged is afflicted with syphilis, gonorrhea, chancroid, or other venereal disease capable of being communicated to another, and also that there is reasonable ground to believe such person is guilty of the misdemeanor or felony charged, he shall have full and complete jurisdiction in the premises to issue mittimus of commitment, committing such person to an internment hospital for medical observation or treatment as in this act provided, during the interim of time between such hearing and the date of the trial, notwithstanding such person's ability to give or having given bond to answer and appear before the court to which such person is held on the crime charged.

Sect. 14. That the United States district court of the various districts shall have full and complete jurisdiction in all misdemeanors and felony cases defined by this act and shall have full and complete jurisdiction to enter judgment therein and shall at all times have jurisdiction to issue mittimus of commitment in proper case to any internment hospital.

Sect. 15. That in all prosecutions under Sections 4 and 10 of this act, if it shall be ascertained, either prior to or at the hearing before the commissioner or prior to or at the trial, that the person charged with felony or misdemeanor, as the case may be, is afflicted with syphilis, gonorrhea, chancroid, or other venereal disease capable of being communicated to another, the commissioner or the judge, as the case may be, may issue his mittimus of commitment committing such person to an internment hospital for medical observation or treatment, and the hearing or trial may be ordered continued until such person shall have been discharged by the proper authorities from said hospital as cured, and that during said period of time the statute of limitations shall not be in operation.

This proposed act, which appears under the title of a "Man Power Bill," is in reality a measure intended to aid in the control of venereal diseases, which it aims to do rather by an increase in the powers of the Public Health Service than by a curtailment of those powers and a corresponding increase of the powers of the Army Medical Service. During a time of war, it is a question which of these methods would be preferable. In general, we are disposed to believe that the control of a problem so large, so vital, and so perplexing as that presented by the venereal diseases, is better to remain in the hands of a civilian, rather than of a military, service, since the former can more properly deal with all elements of the community. Nevertheless, *inter arma leges silent;* and if upon careful consideration in committee, it seems wiser to place the control of venereal diseases under military jurisdiction for the duration of the war, there should be no objection to such procedure and to the postponement of Mr. Miller's excellent measure until the period of reconstruction and social reorganization which must follow.

NATIONAL TUBERCULOSIS ASSOCIATION.

THE 14th annual meeting of the National Tuberculosis Association was held on June 6 at the Copley-Plaza. Meetings were held by the clinical, sociological, and pathological sections, and an exhibition was shown of work done by the National Association, the Rutland Sanatorium, the Massachusetts Department of Health, and in Framingham and New York. The prominence of the speakers and the vast amount of educational material in the exhibition made this one of the most important meetings dealing with the tuberculosis problem held in Boston.

The address of Colonel George E. Bushnell, Medical Corps, U.S.A., Retired, was particularly interesting and appropriate because it reported the results of the campaign which the United States began a year ago as a war measure against tuberculosis. Colonel Bushnell explained the steps taken to standardize the methods and indications in order to secure uniformity in practice. He reported that in the examinations at officers' training camps, .362%, and in aviation service .159%, were found to have tuberculosis. At Camp Taylor, Kentucky, rejections averaged 1.61%. At Camp Kearney, California, examinations showed 4.831% to be tuberculous. An examination of five howitzer companies at Fort MacArthur, California, showed cases amounting to 20.55%. The National Army encampments report .673%. The National Guard reports a percentage of 1.099. Viewing the examination as a whole, Colonel Bushnell said that it was surely worth while to exclude from our Army 10,000 men, of whom the great majority had tuberculosis without a shadow of doubt. Viewing the matter from the pecuniary side, Colonel Bushnell said that at a conservative estimate, the tuberculous soldier costs the Government on an average of $1000 for pensions.

In speaking of conditions in the future, Colonel Bushnell deplored the fact that exigencies of war often make the highest value of examinations impossible, because of lack of time. In regard to the provision which the Government is making for the care of the tuberculous soldier, he mentioned the vast hospital expansion. The William Wirt Winchester Memorial Tuberculosis Hospital at New Haven, Conn., the hospital at Otisville, New York, the sanatorium at Markleton, Pa., a hospital under construction at Azalea, N. C., and other institutions will give a total of 5875 beds available for the treatment of tuberculosis in the Army.

Colonel Bushnell enumerated, also, the difficulties which must be surmounted in the future. The first problem will be to induce the patient to remain under treatment; every effort will be made to delay discharge until treatment has been proved efficacious. The second obstacle will be met when the soldier expresses a desire to return on furlough to his family and home. A further problem will be presented by those who are content to maintain themselves without work on a government pension, especially since, in curing the disease, complete relaxation of mind and body is necessary, and he becomes accustomed to a life of ease and indolence. A further difficulty is presented by the fact that the tuberculous often do not realize that they are ill until they are very ill, and the mind craves diversion and loathes rest, when the body is not conscious that rest is needed. Colonel Bushnell advocated no diversion, but complete attention to the business of getting well.

Colonel Bushnell declared that in order to accomplish these results, a standardization of treatment is necessary. To effect this standardization, a course of instruction has been instituted for medical officers engaged in this work.

Another important address was made before the convention by Dr. D. B. Armstrong, who described the work being done in Framingham. Dr. Armstrong is reported to have made the following statements:

"In the last year, 5000 people were examined in Framingham. Over 2% of these, representing all ages and types, were found to be tuberculous. In Framingham not more than forty cases a year were under observation before the demonstration. In 1917, the first demonstration year, the number was 185. This proves that the cases are there and can be found. They must be found if the disease is to be controlled. The Framingham town agencies and the townspeople have set an example to other towns in discovering tuberculosis. All have coöperated to improve health. Physicians have been provided for the schools, the infant clinics and the factories, and the town now has the best health organization in the United States.

In 1917, the tuberculosis death rate was 9.9 per 10,000, as compared with 12.1 for the previous decade."

The following view of the Framingham work was presented by Miss Mary A. Abel, educational assistant in the demonstration:

"The chief educational activity of the Framingham Health Demonstration is in making people 'think' health in terms of the community. In doing this it is employing such agencies as newspapers, special meetings, lectures, exhibits, placards, posters, domestic science classes, lantern slide lectures, health clubs, and personal conferences. The demonstration is creating a community consciousness and responsibility in the matter of disease prevention by emphasizing the need for medical examinations at regular intervals.

"Over two thousand school children and three hundred freshmen in high school are organized as health crusaders, with a plan for keeping a daily record of health chores. Ninety-five per cent. of these children selected 'Community Health' for the topic of an essay on some phase of community life. The town is fully organized. Every street and every road in the country about is represented by a man or woman visitor who is doing volunteer service for the community in reporting sickness, births and general health conditions."

An experiment in which the Jewish Tuberculosis Committee of New York City operated a factory for the employment of convalescent and recovered tuberculosis patients, was described before the sociological section of the Association, by Edward Hochhauser, the executive secretary of this committee, and was, in substance, as follows:

"In the final analysis the real test of effective care of the tuberculous is the return of the patient to economic usefulness, and if possible, a condition of self-support. Finding that we could not obtain suitable employment for our patients in ordinary factories, we started a factory ourselves. As many of these patients had been needle workers, we took up garment making. Working and sanitary conditions were observed and regulated with great care, and the workers were constantly re-examined by a tuberculosis specialist.

"The results, we feel, have justified the experiment. As only negative sputum cases were accepted, the factory was primarily not a medical proposition, but an economic undertaking. As regards the patients, we found that the opportunity afforded to earn better wages than was otherwise possible, while also making progress back to health, proved a general stimulus and rehabilitated many individuals and families. The saving in relief, in the case of those who formerly required charitable assistance, has been far in excess of the cost of conducting the factory, and the families have had considerably more than they would have had if they had continued as relief cases. The saving in health and in relief would have justified our experiment, even if at the end of three years our resources had consisted solely of the equipment at the factory. As a matter of fact, we have been entirely self-supporting for the last seventeen months, and our resources, as reported by certified accountants, are equal to the amount advanced by the committee."

Dr. C. A. Prosser, secretary of the Federal Board for Vocational Education in Washington, is reported to have said in an address before the sociological section:

"Figures compiled from the averages of all belligerents show that for every 1,000,000 men mobilized, 10,000, or 1% of them, each year would be proper subjects for vocational re-training. In two years this would be 20,000, three years 30,000, and so on. On the basis of an army of 5,000,000 men we should have 50,000 men per year who would need assistance and help in restoration and increase of their earning capacity, under the various classes of disability incurred.

"Of the 10,000 men out of the 1,000,000, fully 50% will require medical rather than surgical care—men who have developed tuberculosis, heart trouble, kidney trouble, and functional disorders. The other half of the 10,000 must have some sort of surgical attention. Of the 5000 surgical cases there will be, as the averages show us, 10% of dismemberment cases where there has been a leg or an arm lost, and of these 500 men 300 will have lost one or both legs and 200 will have lost one or both arms. The figures show an astonishingly small percentage of blindness. Out of the 41,000 men returned to Canada, there were only 27 blinded men.

A study of these and other figures carries the conviction that this problem is by no means wholly that of the cripple or the maimed. It is a problem of the man who has a complication of troubles or injuries that, while surgical, do not amount to dismemberment, such, for instance, as a man with the muscles of an arm shot away, causing him to lose the use of his arm.

With such a diversity of injuries, the work of re-educating these men becomes one which cannot be dealt with along broad general lines, but each man will require individual treatment, individual study of his case, individual training and individual efforts on his behalf in placement after he has been re-equipped to take up the broken threads of civilian life."

Lieut.-Colonel Harry E. Mock, M.R.C., of Washington, in speaking of "Reconstruction and Rehabilitation Work for the Tuberculous in the Army," advocated the following three lines of treatment for reclaiming the discharged soldier as a useful citizen:

(*a*) The best medical treatment, with certain adjuncts to secure the most rapid recovery.

(*b*) Certain occupations in connection with this treatment to prevent hospitalization and to refit for employment.

(*c*) Suitable employment after the disease is arrested or apparently cured, combined with proper medical, social and economic supervision.

Dr. Vincent Y. Bowditch, of Boston, contrasted the expensive systems of ventilation installed in many public buildings with the simple devices used in open-air schools and sanatoria, saying that the latter are not only much cheaper, but also more efficient.

ELKS' HOSPITAL.

The reconstruction hospital which the Benevolent and Protective Order of Elks is erecting on Parker Hill, Roxbury, has been accepted as a gift by the United States Government. This is the first hospital of its kind to be given by any organization to the Government, and its function will be to return to society soldiers disabled in the war in as nearly their pre-war condition as possible. The new building and grounds, to be provided at a cost of $250,000, will be devoted to the medical, surgical, and occupational rehabilitation of soldiers, and will furnish the model for other hospitals which the Elks are planning to erect in New York, Chicago, New Orleans, San Francisco, and other large cities.

All the Grand Lodge and all district deputies of New England and the Elks' War Relief Committee attended the corner-stone exercises held on June 15. Brig.-Gen. John W. Ruckman formally accepted the hospital in the name of the Secretary of War. Among the speakers were: Grand Exalted Ruler Fred Harper of Lynchburg, Va., the Past Grand Exalted Ruler John K. Tener, Governor McCall, Mayor Peters, Major Frederick J. Cotton, who will have charge of the Hospital, and E. Mark Sullivan, Exalted Ruler of the Boston Lodge of Elks. Past Grand Exalted Ruler James R. Nicholson of this city is credited with being the father of the idea that led to the establishment of the reconstruction hospital.

The dedication of this hospital marks not only the inauguration of the important work of reconstruction for war cripples in the United States, but the addition of another large medical institution to those already grouped about the Harvard Medical School in Boston.

OFFICIAL NAMES OF LICENSED DRUGS.

In another column of this issue of the Journal is published a communication from Professor Stieglitz, Chairman of the Subcommittee on Synthetic Drugs of the National Research Council, of the American Medical Association relative to the identity of procaine and novocaine.

On behalf of the Committee, Dr. Stieglitz also urges that physicians adopt the Federal

Trade Commission's recommendation to use the official name of licensed drugs, and if the proprietary brand is to be used, to place this side by side with the official name.

The official names so far adopted by the Federal Trade Commission are:

Arsphenamine for the drug marketed as salvarsan, diarsenol and arsenobenzol.

Neoarsphenamine for the drug marketed as neosalvarsan, neodiarsenol and novarsenobenzol.

Barbital for the drug marketed as veronal.

Barbital-sodium for the drug marketed as medinal and veronal-sodium.

Procaine for the drug marketed as novocaine.

Procaine nitrate for the drug marketed as novocaine nitrate.

Phenylcinchoninic acid for the drug marketed as atophan.

MEN WHO REGISTERED JUNE 5th MAY ENROLL IN THE NAVAL RESERVE FORCE.

Provost Marshall General Crowder has informed the Bureau of Navigation that men who registered on June 5th, 1918, may enroll in the Naval Reserve upon securing the usual certificates from their Local Boards; the reason being that, inasmuch as new registrants have not been classified, they are not within the current quota, and until classification there is no reason why such releases should not be given upon request.

The foregoing ruling will allow men who contemplate joining the Naval Reserve to apply to their Local Boards for releases to enroll in the Naval Service.

MEDICAL NOTES.

London Death Rates in April.—Statistics recently published show that the total death rate of London in April, 1918, was 17.1 per thousand inhabitants living. Among the several districts and boroughs, the highest rate was 24.1 in Bermondsey, a populous southern slum, and the lowest was 9.9 in Lewisham, a more suburban region on the south.

Canadian Medical Work.—A conjoint meeting of the Canadian Medical Association, the Canadian Public Health Association, and the Association of the Medical Health Officers of Ontario was held at Hamilton, Ontario, from May 27 to June 1. The following are some of the principal items of interest on the program:

A symposium on the subject of the returned soldier problem, at which the Militia Department at Ottawa was represented. Addresses or papers by Dr. Charles H. Mayo, Rochester, Minn. (surgery); Professor L. Barker, Baltimore (medicine); Dr. Isaac Jones, Philadelphia (ear); Dr. Thomas McCrae, Baltimore; Dr. Leonard Rowntree, Minneapolis; Dr. Casey Wood, Chicago; Dr. Walter Parker, Detroit; Dr. John Wheeler, New York City; Dr. Joseph Beck, Chicago; Dr. H. Halsted, Syracuse; Dr. McGuire, Buffalo; and Dr. Hymman, St. Louis. A pathological museum, including a fine assortment from McGill University, exhibits from the Babies' Hospital, New York City, Queen's University, Kingston, the Western, London, Ont., and the University of Toronto Medical Department. Charts and literature in connection with the reform propaganda of the American Medical Association.

Dr. H. Beaumont Small, of Ottawa, who has been for 20 years treasurer of the Canadian Medical Association, presided.

WAR NOTES.

Lynn Physician Wins Commission in Navy.—Dr. William G. Ward of Lynn, a leading surgeon of Essex county, has been commissioned a lieutenant commander in the United States navy. He will have charge of five doctors and fifteen nurses. He is the twenty-fourth doctor from Lynn to enter the service of the United States.

Commissioned in the Officers' Reserve Corps.—The following New England appointments have been made in the Officers' Reserve Corps:

Captains, medical reserve, C. A. Ahearne, Jr., Salem; T. F. Carroll, Brookline; F. E. Withee, Newton Highlands; G. MacD. Albee, Worcester; J. W. Clarke, Attleboro; R. H. Vose, Boston.

First lieutenants, medical reserve, J. S. Johnston, Boston; F. D. Adams, Boston; J. P. A. Bacon, Lawrence; A. B. Gardner, Lowell; C. L. Hoitt, Lynn; R. H. Philbrick, East Northfield.

First lieutenants, sanitary corps, J. S. Brennan, Brockton; J. L. Campbell, Greenfield; B. F. Lamphier, Dorchester.

New Dental Hospital at Camp Devens.—A new dental hospital, the first of its kind in the country, is to be opened at Camp Devens within a few days. The building, which is situated close to the Liberty Theatre in the center of the camp, has been completed. Hereafter, all of the dental work in the division and other organizations, with the exception of the Depot Brigade, will be done in this building.

The hospital is arranged to accommodate sixteen operators and is two stories high. The ground floor contains reception rooms for officers and men, a record room, an extracting room, and three officers' operating rooms. Most of the upper floor is given over to a clinic with twelve chairs. There is also a dental laboratory and locker rooms for the dental surgeons.

An annex to the camp dental hospital is to be established in the third infirmary of the Depot Brigade, where the teeth of the men in the Depot Brigade only will be treated by ten dental surgeons assigned to that work.

The new hospital will be in charge of Captain Thomas E. Power of Cambridge. Captain Walter Grandidge of Bridgeport, Conn., will have charge of the Depot Brigade Annex, and all of the work will come under the supervision of Major John L. Schock, the camp dental surgeon. First Lieutenant Frederick C. Daniels of Waterbury, Conn., is the division dental surgeon.

The dental organization at Camp Devens has the reputation of being the best in the Army. Nearly 60,000 different operations have been performed upon the officers and men of the camp during the past eight months, and, figuring the cost of materials and depreciation on each operation, it has cost the Government an average of 70 cents each. There are forty-six commissioned dentists in the camp at the present time, thirty-one of whom are assigned to the seventy-sixth division. The work done by Major Schock and his assistants has been the source of much favorable comment from Washington. Approximately 16% of the men in the first draft were rejected because of poor teeth, but the camp dentists materially reduced this percentage of rejections in subsequent drafts.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending June 15, 1918, the number of deaths reported was 216, against 227 last year, with a rate of 14.36, against 15.33 last year. There were 34 deaths uænder one year of age against 25 last year.

The number of cases of principal reportable diseases were: diphtheria, 41; scarlet fever, 26; measles, 257; whooping cough, 61; typhoid fever, 1; tuberculosis, 65.

Included in the above were the following cases of non-residents: diphtheria, 14; scarlet fever, 6; measles, 1; typhoid fever, 1; tuberculosis, 5.

Total deaths from these diseases were: diphtheria, 6; measles, 5; whooping cough, 2; tuberculosis, 20.

Included in the above were the following non-residents: diphtheria, 2; tuberculosis, 2.

Harvard Appoints Cancer Commission.—The Harvard Corporation has announced appointments to the Cancer Commission of Harvard University and Collis P. Huntington Memorial Hospital. Dr. Robert B. Greenough will act as director of the Commission, and as surgeon in charge of the hospital staff.. Dr. Channing C. Simmons will continue as his secretary, and with Dr. Edward H. Risley, will serve as surgeon at the hospital.

Other members of the Commission are: Dr. James H. Wright, pathologist, in charge of diagnosis service; William Duane, research fellow in physics; William T. Boyle, research fellow in biology; Dr. Henry Lyman, research fellow in chemistry, and Clarence C. Little, research fellow in genetics.

The hospital staff appointees include: Dr. George G. Smith, assistant surgeon; Dr. Henry A. Christian, consulting physician; Dr. Francis W. Peabody, consulting physician; Dr. Gerald Blake, physician; Dr. George R. Minot, assisting consulting physician; Dr. Daniel C. Greene, consulting laryngologist; and Dr. Henry A. Barnes, assistant laryngologist.

Children's Pavilion at Sharon.—The Children's Pavilion at Sharon, for boys and girls from seven to fourteen years showing symptoms of tuberculosis, has been completed. The importance of recognizing this disease in childhood, and the necessity of reinforcing all the powers of resistance early in life, make this pavilion a distinct advance in preventive work.

The new building is a simple structure, combining the best modern features of both sanatorium and school. It is of concrete to the second story. There are two dormitories for the accommodation of sixteen patients, and an administration center. Opportunity is afforded for enlargement. One room in the basement will be used for a refrigerating plant, and, it is hoped, may some day be equipped with an x-ray apparatus. By combining the teaching of hygiene and sanatorium life, a two-fold benefit is obtained; the children not only regain their health, but, as has been proved in open-air schools, they do better work than in the ordinary closed room. Thousands die in Massachusetts every year from this disease in one form or another, and although decreasing slowly and steadily in modern times, it still leads in the death rate.

For years there have been no entertainments for the benefit of the sanatorium. Private appeals were made, but these have not yielded the returns essential to accomplish what is needed.

Massachusetts State Nurses' Association. At the annual meeting of the Massachusetts State Nurses' Association held on June 11, the Rev. Dr. Alexander Mann, rector of Trinity Church, praised the nurses of this State for their part in the war. He is reported to have said in part:

"The charge of unpreparedness has frequently been levelled against us, but this great war did not find the hospital service of the Army and Navy unprepared. Both were ready before there was any large call for their services, and today something like 1000 nurses are at work in the two branches, making one-sixth of the total number in the State. That is a great record, and it is not yet equalled by the draft of the young men. Indeed, I doubt whether there is any State in the Union which can show so large a proportion. And you must remember that one-tenth of all the nurses now in the service have come from Massachusetts."

Another address was given by Laura A. C. Hughes, M.D., R.N., Acting President. Reports were given of the A.N.A. Convention, of the Massachusetts State League of Nursing Education, of the Private Duty Nurses' League, of the State Red Cross Committee, and of the County Councillors.

The Association now has a membership of 1347, representing a gain of 446 during the past year. Miss Bertha Dart, graduate of the Massachusetts General Hospital, and superintendent of nurses at the Stillman Infirmary, has been elected president. Other officers chosen were: Dr. Laura A. C. Hughes, first vice-president; Mrs. Agnes C. McNamara, second vice-president; Miss Charlotte W. Dana, treasurer; Miss Julia A. Smith, recording secretary; Miss Mary E. P. Davis, corresponding secretary; and Miss Mary M. Riddle, historian.

Miscellany.

COMPARATIVE STATISTICS ON PHYSICAL EXAMINATIONS OF PUPILS OF THE BOSTON PUBLIC SCHOOLS FROM DECEMBER 1, 1915, TO MARCH 1, 1918.

By William H. Devine, M.D.

Director of Medical Inspection.

	1915-16	1916-17	1917 to Mch. 1, 1918
Total number of pupils examined	99,862	104,287	93,976
Total number without defects	30,781	38,318	55,957
Total number with defects	69,081	65,969	38,019
Defects as follows:			
Defective nasal breathing			
Anterior	1,292	1,297	839
Posterior	5,966	5,282	4,582
Hypertrophied tonsils	18,444	14,806	12,702
Defective palate	351	169	121
Cervical glands	18,841	7,746	6,730
Pulmonary disease:			
Tuberculous	44	22	30
Non-tuberculous	683	453	387
Question	—	1	—
Cardiac disease:			
Organic	1,330	1,406	1,460
Functional	1,668	1,716	1,660
Nervous disease:			
Organic	74	48	42
Functional	221	179	130
Chorea	43	23	33
Orthopedic defects:			
Tuberculous	88	76	58
Non-tuberculous	1,698	1,770	1,661
Skin	3,071	2,978	2,111
Rickets	383	326	282
Malnutrition	2,110	1,712	1,889
Mental deficiency	431	448	592
Totals	56,738	40,458	34,717
Defective teeth	56,750*	55,638*	46,349
Grand Totals	113,488	96,096	81,066

* During the year 1915-16, and from Oct. 1, 1916, to Jan. 1, 1917, defective teeth were classed as primary and secondary. In some instances, if a pupil had defective primary and defective secondary teeth, it was recorded as two defects instead of one. In order to avoid duplication of defects, it was thought advisable to record defective teeth as one defect without regard to whether they were primary or secondary. This method was adopted commencing Jan. 1, 1917.

This year a decided gain is noted in the number of children without defects. There is a marked diminution in the number of cases of defective nasal breathing, both anterior and posterior, and of hypertrophied tonsils.

The decrease in cervical glands continues, and, as stated last year, this is partly due to the fact that school physicians have been instructed not to report slightly palpable glands when secondary to adenoids, tonsils, carious teeth, pediculosis, or other allied condition. These cases are kept under observation, and only the primary causes reported.

Figures indicate that malnutrition is quite prevalent in our schools. The number of cases are about the same as for the two previous years. The diagnosis is necessarily uncertain, and comparative statistics are not as reliable as in certain morbid conditions which can be more accurately diagnosed. War conditions, with the increased cost of living, have augmented the number of cases.

The principal causes of malnutrition existing in school children are insufficient and improperly prepared food, impaired digestion due to imperfect mastication, bolting of food, lack of fresh air, proper exercise, etc. All may be important factors in the cause of the disease, and should be corrected by training the child to take the properly balanced diet, or substitutes; to masticate the food thoroughly; by instructions to mothers on the selection and preparation of food, the value of exercise, fresh air, and other hygienic measures. The physicians, nurses, and teachers have been instructed to make special effort to improve the condition of these children.

Correspondence.

PROCAINE AND NOVOCAINE IDENTICAL.

Mr. Editor:

It appears that in certain quarters the attitude is taken that the local anesthetic sold as procaine is not identical with that marketed as novocaine. The Subcommittee on Synthetic Drugs of the National Research Council believes it important that this misunderstanding should be corrected, and hence offers the following explanation:

The monohydrochloride of para-amino-benzoyldiethyl-amino-ethanol, which was formerly made in Germany by the Farbwerke vorm. Meister, Lucius and Bruening, Hoechst A.M., and sold under the trademarked name Novocaine, is now manufactured in the United States. Under the provisions of the Trading with the Enemy Act, the Federal Trade Commission has taken over the patent that gave monopoly for the manufacture and sale of the local anesthetic to the German corporation, and has issued licenses to American concerns for the manufacture of the product. This license makes it a condition that the product first introduced under the proprietary name "Novocaine" shall be called procaine, and that it shall in every way be the same as the article formerly obtained from Germany. To insure this identity with the German novocaine, the Federal Trade Commission has submitted the product of each firm licensed to the A. M. A. Chemical Laboratory to establish its chemical identity and purity, and to the Cornell pharmacologist, Dr. R. A. Hatcher, to determine that it is not unduly toxic.

So far, the following firms have been licensed to manufacture and sell procaine:

The Abbott Laboratories, Ravenswood, Chicago.
Farbwerke-Hoechst Company, New York, N. Y.
Rector Chemical Co., Inc., New York, N. Y.
Calco Chemical Company, Bound Brook, N. J.

Of these, the first three firms are offering their products for sale at this time, and have secured their admission to New and Nonofficial Remedies as brands of procaine which comply with the New and Nonofficial Remedies standards.

While all firms are required to sell their product under the official name "Procaine," the Farbwerke-Hoechst Company is permitted to use the trade designation "novocaine," in addition, since it holds the right to this designation by virtue of trademark registration.

In conclusion: Procaine is identical with the substance first introduced as novocaine. In the interest of rational nomenclature, the first term should be used in prescriptions and scientific contributions. If it is deemed necessary to designate the product of a particular firm, this may be done by writing "Procaine-Abbott," "Procaine Rector," or "Procaine-Farbwerke," or Procaine (Novocaine brand).

Julius Stieglitz, *Chairman*,
Subco'm'tee on Synthetic Drugs, Nat. Research Council.

RECENT DEATHS.

Dr. Joseph Cyrus Stedman, of Jamaica Plain, one of Boston's best known practitioners, died recently of heart ailment at the Johns Hopkins Hospital, Baltimore.

Dr. Stedman was born in Jamaica Plain, Feb. 28, 1867, the son of Dr. Joseph Stedman, whose clientele included a majority of the families on the south side of the city. He studied medicine at the New York University and was graduated in 1890. He devoted two years to practice in New York and held membership on the staff of the Postgraduate Hospital.

He then came to Boston and took up an active practice. For years he was surgeon at the Faulkner Hospital, and only relinquished the duties when failing health forced him to give up active work. He was a member of the Massachusetts Medical Society, the New York County Medical Association, the Boston Society for Medical Improvement, Boston Medical Library and Massachusetts Automobile Club. At the time of his death he was supervising censor for the Norfolk District Medical Society. His home had been at 7 Lakeville Place, Jamaica Plain.

Ernest Varian Scribner, M.D., died June 14, 1918. in the Worcester State Hospital, of which he had been superintendent for six years, after an illness of five weeks. He was born in Lewiston, Me., Feb. 28, 1855, was graduated from Bates College in 1878, and from Bowdoin College Medical School in 1881. Dr. Scribner had been for thirty-seven years connected with the Grafton State Hospital and the Worcester State Hospital, in Worcester, serving as assistant physician and as superintendent in both institutions during the period. He is survived by his widow and two sons.

He had been a Fellow of the Massachusetts Medical Society since 1882, and had served the Society as a councilor. He was president of the Worcester District Medical Society in 1907.

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